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ABSTRACT

The Educational Policy and Planning (EPP) Project assists the Indonesian Ministry of Education and Culture (MOEC) in establishing an information system to improve policy analysis and formulation. There are five elements of the project strategy: increase the ability of MOEC staff to create and use information for use in policy research, strengthen the internal management and organization of the Office of Educational and Cultural Research and Development, support research and analysis, expand capacity to conduct policy research and analysis, and develop planning and information systems at provincial and district levels. The EPP and the Improving the Efficiency of Educational Systems (IEES) project are assisting the MOEC enter its second 25-year planning period. This report covers several areas of the involvement of the EPP and IEES in developing the Indonesian education system. Subjects covered in the report include an overview of the EPP; the partnership of the IEES and the EPP; developing an integrated management information system; the quality of basic education; the quality and efficiency of vocational/technical education; strengthening local education capacity; educational indicators for policy purposes; teacher education; curriculum reform; developing provincial sector review capacity; and education, the economy, and development. (JPT)

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EPP

EDUCATIONAL POLICY AND PLANNING PROJECT

A GOVERNMENT OF INDONESIA - USAID PROJECT

Summary of Activities and Policy Studies

June 1992

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PREFACE

The Educational Policy and Planning (EPP) Project is a seven year project conducted jointly by the Indonesia Ministry of Education (MOEC) and the United States Agency for International Development (USAID). The overall project objective is to improve the quality of education in Indonesia by assisting the MOEC, through the Office of Educational and Cultural Research and Development (Balitbang Dikbud), to formulate better policies and long-term plans. The project aims to improve policy formulation and long-term planning by improving the timeliness, relevance and accuracy of educational data collection, the subsequent analyses of such data, and their ultimate use for policy and decisionmaking.

There are three major components of the EPP Project: (1) development of an integrated management informations system (MIS) within the MOEC, (2) enhancement of MOEC policy research and analysis capacity, and (3) support for MOEC institutional development at the national and provincial level through training and technical assistance. EPP technical advisory staff work closely with counterpart Indonesian staff as part of a collaborative process of developing institutional capacity.

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The EPP Project in collaboration with the USAID Improving the Efficiency of Educational Systems (IEES) Project, publishes EPP documents in order to disseminate this knowledge and extend its usefulness. EPP has carried out a series of policy studies designed to provide answers to key questions facing Indonesian educators. These include:

The Quality of Basic Education
The Quality and Efficiency of Vocational/Technical Education
The Strengthening of Local Education Capacity
Developing Indicators of Educational Efficiency
Teacher Education Issues
Curriculum Reform and Textbook Production
Education, Economic, and Social Development

This series has been planned under the direction of Moegiadi, Balitbang Dikbud, and Boediono, Center for Informatics, Balitbang Dikbud and Simon Ju, EPP Chief of Party.

Editors for the series are Abas Gozali, Reta Hendrati Dewi, Center for Informatics, and Jerry Messec, IEES, Florida State University.

Summary of Activities and Policy Studies

Table of Contents

1.0 Overview of the Educational Policy and Planning Project (EPP) 1

2.0 Partnership of the USAID Improving Efficiency of Educational Systems (IEES) and the Educational Policy and Planning Project (EPP) 9

3.0 Developing an Integrated Management Information System 17

4.0 The Quality of Basic Education 39

5.0 The Quality and Efficiency of Vocational/Technical Education 51
5.1 Background 51
5.2 The Transition from Education to Employment: The Quality and Efficiency of Vocational/Technical Status Report 59

6.0 Strengthening Local Education Capacity 63
6.1 Strengthening Local Education Capacity I 63
6.2 Strengthening Local Education Capacity II 67

7.0 Educational Indicators for Policy Purposes 73

8.0 Teacher Education Issues 81

9.0 Curriculum Reform Issues 87
9.1 Curriculum Reform Issues and Textbook Production 87
9.2 Science and Math Curriculum Review 95

10.0 Education, the Economy, and Development 107
10.1 Education, Economics and Social Development 109
10.2 Education and the Economy 117

11.0 Developing Provincial Sector Review Capacity 121
11.1 West Java Recommendations 123
11.2 East Java Recommendations 127
11.3 South Sulawesi Recommendations 133

1.0 OVERVIEW OF THE EDUCATIONAL POLICY AND PLANNING PROJECT (EPP)

Educational Policy and Planning (EPP): An Integrated Information System in Indonesia

What is EPP?

Educational Policy and Planning (EPP) Project assists the Ministry of Education and Culture in Indonesia with the establishment of an integrated information system to strengthen its capacity for policy analysis and policy formulation. This includes development of analytic skills to use information, administrative procedures to collect information, and data management equipment to store and manipulate information. Emphasis is given to the Information Center (Pusat Informatika) of the Office of Educational and Cultural Research and Development (abbreviated in Indonesian as Balitbang Dikbud). However, since the effectiveness of the Pusat Informatika in generating information and serving the various principal units of the Department depends on the ability of those units to use and interpret information, the project includes efforts to strengthen their capabilities as well. This includes the Secretariat-General, the Directorate-General of Basic and Secondary Education, and the Directorate-General of Higher Education, as well as selected regional offices (Kanwil) of the Department.

The project was divided into two phases. Phase One, lasting approximately 1985-1987, was largely a period of investigation and formulation of detailed plans for development of an improved information system.

There are five elements of the project strategy:

1. *Increasing the capacity of MOEC staff* to generate, process and analyze educational and cultural information, as well as to undertake policy research, analysis and long term planning;
2. *Strengthening the internal management and organization* of Balitbang Dikbud, effectively linking its proposed three main components of education research, policy analysis and information system;
3. *Special studies to support research and analysis* of key issues affecting the development of the educational system and the implementation of the Repelitas (4 five-year plans) and which are seen by the relevant implementing agencies within the Department as directly related to their on-going programming, budgeting and implementation activities;
4. *Upgrading the capacity of the Pusat Informatika* within Balitbang Dikbud to serve the policy research, analysis and planning needs of Balitbang Dikbud itself including the development of an information system to meet those needs;
5. *Further development of planning and information systems* at the provincial and district levels.

How has EPP changed since implementation?

The design of EPP anticipated the need for mid-course change and adjustment and allowed for this in two phases.

Phase One. Phase One consisted of experimental and exploratory efforts designed to generate both experience with and the understanding of key organizational, management and institutional issues. These experiments and studies resulted in specific policy recommendations and a plan for an improved and expanded information system for policy analysis.

1) Increased Capacity for Policy Analysis. The training of Department staff to undertake policy analysis began under Phase One through a combination of in-country training courses, short-term M.A.-level and PhD training overseas, on-the-job training during the course of undertaking specific policy studies, and in-country executive seminars. Consultation visits to the U.S. and other third world countries were included.

Department staff were trained overseas to the MA level and the PhD level in policy-related disciplines. In-country training in statistical analysis, forecasting, research methodologies, and policy analysis was provided to staff involved in policy studies supported by the project. Finally, there were in-country short courses to introduce basic tools of policy analysis to senior management and other Balitbang Dikbud staff. Funds for this were built into the project budget and candidates were selected on the basis of the level of their involvement and participation in the EPP research activities.

Training also included staff from the Directorates-General and from selected provincial Kanwil offices. Short-term in-country training, with particular emphasis on data analysis and identification of policy issues, was provided to staff members from the Secretary-General's office. In addition, staff from the Directorate-General of Primary and Secondary Education also received short-term training in quantitative analysis and information management.

Because the increased emphasis on policy analysis required a different kind of staff within Balitbang Dikbud, consideration was given to ways in which new full-time staff were recruited into the agency.

During the initial six months of the project, the EPP Working Team held discussions, both within Balitbang Dikbud, with the EPP Steering Committee, and amongst other agencies in the Department, to elaborate and refine this plan. The Steering Committee reviews and approves the EPP training plan annually, so that modifications may be made based on experience over time. For both in-country and overseas training, the annual training plan includes a statement of training objectives and their relationship to the project purpose, identification of the type of training and the expected implementation schedule, identification of the expected number of participants and their present role and agency, and an estimated budget for training activities indicating what kinds of costs will be met by the GOI and AID.

2) Institutional Organization and Management of Balitbang Dikbud. A second step in Phase One of EPP was a review of the internal management and organization of Balitbang Dikbud itself. Balitbang Dikbud has been given a mandate with increased emphasis on policy analysis. This mandate entails a new internal management system and new relationships with other agencies within the Department. Technical assistance was provided from EPP to assist the Head of Balitbang Dikbud to review the management of the agency. Issues addressed during this period included the relationship of the educational research centers of Balitbang Dikbud with Pusat Informatika and the proposed policy research and development groups. The respective functions and responsibilities of these units were examined, and recommendations made on ways in which the transition to a new internal management system could best be achieved.

Internal staff seminars at Balitbang Dikbud were organized to present the management plan approved by the Head of Balitbang Dikbud, and to help develop new skills and procedures.

3) Special Studies. The EPP Steering Committee, assisted by the Working Team and the Technical Assistance Team, identified and approved special study topics to receive project support during Phase One and Two. Two special studies were completed during Phase One.

The first study undertaken focused on the monitoring and evaluating programs undertaken during the Fourth Five-Year National Development Plan (Repelita IV). This study determined the information needed to monitor and assess progress under the Repelita, with special attention to the long-term policy implications of the progress achieved. A preliminary model to analyze progress in implementing Repelita IV was developed in 1985.

A second study planned a centralized departmental information system, serving the needs of the operational agencies of the Department. Because of the number of agencies involved, the amount of data required, and the presence of on-going systems of information collection, substantial investigation, consultation and experimentation was required before an acceptable integrated system could be planned. This special study defined information needs, reporting requirements, administrative arrangements and hardware necessary to ensure the flow of information. This was used in planning activities supported by other donors to improve the management and administration of the Department, including the information system.

Two other important studies, The Quality of Basic Education in Indonesia and The Cost and Quality of Vocational Education are discussed below.

4) Increased Capacity of the Pusat Informatika. The project identified information needs for policy analysis and planning within the Information Department, as well as key decision points within the present planning system, and the information needed at those points. In addition, EPP conducted further investigation of the nature of the information generated at the provincial and Kabupatan (district) level and ways to improve its relevance and accuracy.

Overseas training in information systems and computer sciences to the M.A. and the PhD level was provided. In-country or regional technical training in computer skills, data processing techniques and information systems management was also provided. Training included staff from the Directorates-General and other main units, Kanwil and Kandep offices. Basic skills required by Pusat Informatika include computer programming, information and library sciences, and computer operation and maintenance.

5) Development at the Provincial Level. EPP assisted in a review of the needs of provincial offices (Kanwil) in the present planning process to determine what kinds of decisions are or can be made at that level. EPP identified information needs for policy and planning purposes at both the provincial and national level. The objective was to see how provincial planning capabilities can be strengthened and how the present centralized planning process could move toward a level of decentralization giving greater scope to provincial initiatives without sacrificing the quality or the cohesion of a national system.

Three provinces were selected for this work on the basis of the size of population, capacity of Kanwil and Kandep staff, nature of problems faced in educational development, and potential linkages with other AID projects concerned with policy analysis, planning and information systems. Efforts at the provincial level involve development of improved methods of data collection and processing, simplification of information flows, and greater scope for provincial innovations in planning and programming. These efforts began

initially in only two provinces (Jawa Barat [West Java] and Sulawesi Selatan [South Sulawesi), with work in Nusa Tenggara Barat beginning approximately one year later.

The project also supported in-country short courses in educational planning, administration and evaluations with emphasis on program evaluation techniques. Further training was offered in data processing and management, including support to 30-week awards in computer programming.

Phase Two. Phase Two of EPP derived lessons learned from the work of Phase One. The results of Phase One included the following:

1. The Project Steering Committee reviewed and clarified the relationship between Balitbang Dikbud and the Directorates-General, indicating at how policy analysis should be brought to bear on long-term planning and the annual cycle of preparing budgets and guidelines for program implementation.

2. An annual training plan was developed and approved by the Steering Committee, specifying training objectives and their relationship with the project purpose, kind of training to be offered and anticipated schedule, numbers of expected participants and their agency, and estimated budget.

3. A plan was developed specifying how the different sections of Balitbang Dikbud relate to one another and how their activities were coordinated in order to fulfill the mandate of Balitbang Dikbud for policy analysis, research, and mid- and long range planning.

4. The Steering Committee specified the special studies which remain to be completed during Phase Two, based upon the needs and concerns of the Minister, Secretary-General and the various Directors-General.

5. The Steering Committee approved a comprehensive information system plan and strategy, including details on system architecture, and required capabilities, a time-phased plan for developing and implementing the information system, a recommended system configuration (including recommended equipment for province-level offices of the Ministry), and an estimated budget for implementing the system; the plan addressed and provided recommendations for such issues as (a) the role of the Kanwil in planning, determining targets and monitoring progress, (b) the relative merits and tradeoffs involved in centralized versus decentralized planning, (c) whether the information system should be the sole source of data on programs for the Directorates-General, (d) roles and responsibilities in the information system, (e) policies and procedures that might require modification, (f) changes in data required to support planning and analysis, and (g) the interrelationship of the Ministries of Finance, Education and Home Affairs and Bappenas (Ministry of National Development) in determining and setting educational policy.

Phase Two Project implementation began full operation in 1986 and included the following activities:

1) Expanded Capacity for Policy Analysis. By the beginning of Phase Two, the Department placed candidates in long-term PhD training in policy research and related analysis fields. Training continued throughout Phase Two.

2) Improved Internal Management of Balitbang Dikbud. The management study to assist the internal administration and organization of Balitbang Dikbud was completed during Phase One. Recommendations from that study were reviewed by the leadership of Balitbang Dikbud and a plan of action implemented, including the formation of a policy analysis group (PAG).

3) Special Studies. The initial group of studies to be undertaken through the life of the project was specified by the Steering Committee at the end of Phase One and are being carried out during Phase Two. Approximately five major policy issues will be examined

and research findings presented to the Department by the end of the project, although more, smaller studies have evolved during the identification process.

4) Improvements in the Information System.

a. Training. Training in data collection and data analysis techniques, identification of policy issues, and information management systems development continues throughout Phase Two for staff from the Information Center and from other agencies. This increased institutional capacity supports and complements the increasing demand for more reliable and up-to-date information in a data-driven policy-making process.

IEES-assisted Educational Policy and Planning (EPP) has now expanded the national Educational Management Information System from 6 pilot projects to all 27 project districts throughout Indonesia. This greatly expanded system of collecting and analyzing educational data will support improved decision-making at both local and national levels. Pilot project staff are now capable of not only data collection and summary tabulation, but can also carry out analyses and policy research at the provincial level.

b. Planning, Design and Development. Technical assistance is provided to assist Balitbang Dikbud design and develop an information system that is capable of supporting the policy and planning needs of the Department. This includes assistance in system design, data collection design and administration, hardware and software selection, application program development and data center operations.

c. Commodities. Equipment to support the activities of the Ministry was identified in Phase One for installation during Phase Two. This consists of an upgradable minicomputer at Balitbang Dikbud, with two micro-computers, and microcomputers for selected provinces. This is in accordance with the approved information system development plan resulting from Phase One.

5) Development at the Provincial Level. During Phase One, EPP began the further development of information systems for planning and policy purposes in 3 provinces, Jawa Timur, Sumatra Barat, Nusa Tenggara Timur. To improve the use of data for planning purposes at the provincial level, the project supports the placement of micro- or mini-computers in the three pilot provinces. Based on a review of this work consideration was given to expanding to selected new areas (up to three additional provinces) on a phased basis.

Special Policy Research Studies

Special policy research studies continue and others will be initiated after approval by the EPP Project Steering Committee. Topics for these studies have emerged as a result of reviews of current and completed research, prioritization of the research agenda and assessments of policy research requirements for the preparation and implementation of Repelita V.

Improving the Quality of Basic Education in Indonesia. The conceptualization, instrumentation, piloting and design phase of this study was completed in 1987. The implementation phase was initiated in 1988 with the printing of questionnaires, the training of research teams and the start of data collection in the 3 pilot provinces (West Java, Nusa Tenggara Barat, and South Sulawesi). This EPP long-term study, Improving the Quality of Basic Education in Indonesia, has collected one of the richest data sets on the quality of basic education in developing nations and is currently being sought by major technical assistance agencies. The study provides an exceptionally complete and comprehensive data base for the investigation of those factors that most enhance educational effectiveness, efficiency, and quality at the primary level.

The Development of Manpower Planning Models. A variety of computer models were developed and utilized to prepare Medium Term Manpower Plans for the 3

EPP Pilot Provinces: South Sulawesi, West Java, Nusa Tenggara Barat. These models covered teaching and non-teaching staff requirements for primary education, junior secondary education and senior secondary education. After testing of assumptions and parameters in the pilot provinces, a data-based medium term manpower planning computer model was developed and demonstrated in training workshops to representatives of the 27 provinces and to MOEC's Planning Bureau, for use in the preparation of Repelita V.

The Model Development Group is in charge of this ongoing activity and has also initiated work on an integrated supply demand National Manpower Planning Model. This model and the corresponding software have been demonstrated for external agencies, e.g., Bappenas, and continues to be tested and perfected. In addition, appropriate software is being developed for regional manpower projections to complement the National Model. The Model Development Group is assisted by BRIDGES/Research Triangle Institute (RTI) and the two EPP Resident Technical Advisors.

Long Range Planning – Indonesian Education 2000. The overall goal of the EPP Project is to improve the quality of education in Indonesia through improvement of the policy formulation process and the preparation of long-term plans based on more complete and timely information and better analysis of that information. The aim of this Long Range Planning policy research study is to determine the role of the educational system in the context of future national development. Its goal is to develop the ground work for a new 25-year educational plan to be developed during the Repelita V period.

Longitudinal Tracer Study of Vocational/Technical School Graduates. Vocational/Technical Education has undergone a marked quantitative expansion during the Repelita IV period. Hundreds of new VOTEC schools have been built, dozens of new specializations and study programs have been developed to provide the skilled manpower necessary for Indonesia's entrance into the "take off" stage of sustained industrialization. Enrollment has correspondingly expanded by almost 100% from 550,000 to 1,080,000 students. Despite these impressive quantitative gains, the level of GOI funding has remained the same. Concerns have emerged over the management, quality, overspecialization and high cost and low returns of formal vocational/technical education. Besides the preoccupation with the internal efficiency and effectiveness aspects of such programs, other external efficiency questions have been raised about the "relevance" of certain study programs, the level of preparedness of graduates and their employability and experience in the labor market.

Repelita IV emphasized the need to prepare senior secondary vocational/technical graduates for mid-level technical work and to develop their entrepreneurial skills for self-employment. EPP is conducting longitudinal tracer studies (1990-1992) to collect data and investigate the level of actual graduate activity in the economy with respect to methods of gaining employment, employment tracks (types and length of employment), entrepreneurial activity, post-secondary education and training, earnings, or actual on-the-job performance. The longitudinal studies are complemented by school quality, school costs and funding, and employer surveys in concert with a focused, critical review of the relevant policy issues in the Quality and Efficiency of Vocational/Technical Education Study.

What has contributed to EPP success?

The convergence of two events has contributed to the achievements to date in Indonesia. First, the IEES Sector Review in 1985 coincided with the Indonesian realization of the magnitude of lost revenues due to the drop in oil prices on the international market. This fall in expected revenues led to drastic budgetary expenditure cuts. This event, therefore, created a policy context that was sensitive to issues of efficiency.

Secondly, the results of the IEES Sector Review provided important contributions to the national five-year planning preparations of Repelita V, thereby enhancing the credibility

of IEES while demonstrating its value as a vehicle for promoting data-based policy making. These events have helped to create the participation, collaboration and ownership that has characterized IEES work with EPP.

The momentum of EPP has been maintained by the excellent working relationship with Indonesian counterparts. Despite changes of personnel, the transitions have been smooth–with little loss of momentum in progress towards goals. This successful working relationship has been promoted by the strong EPP staff. The EPP COP ensures maximum coordination and realizes maximum leverage resulting from the close integration of the EPP and central IEES resources. EPP success in Indonesia is also attributable to IEES personnel and EPP consultants with previous Indonesian working experience who have been continuously employed by the Project and, thus, have remained closely involved and committed to efficiency goals.

As a result of the readiness of the Indonesian policy context, as well as the productive combination of the counterpart and EPP, it has been possible to build and maintain successful multi-ministerial and multi-donor involvement. The multi-ministerial bridges that have been developed include the Balitbang Dikbud Planning Unit, BAPPENAS (Ministry of National Development), the Ministry of Labor and Manpower, and the Ministry of Finance.

Unlike many development assistance projects, EPP has successfully maintained a balance between the capacity building component, i.e., participatory research, ownership, and transfer of skills, and quality of research and technical assistance. EPP has worked down from the national level to the provincial level, and even as far down as the Kabupatan (district) levels. At the Kabupatan level, EPP work has involved research on EMIS and data collection for the Vocational Education project. Consequently, IEES and EPP have influenced policy dialogue, the policy process and outcomes at all levels. The policy planning capacity at the national level has improved markedly.

What problems has EPP encountered?

IEES and EPP efforts toward efficiency goals in Indonesia have been regarded as successful, even though problems have at times slowed progress. These have been a result of both staffing problems and internal events. EPP has insisted on Indonesian-experienced staff and has faced difficulties in securing full-time senior staff, due partly to idiosyncratic reasons and partly to the high standard of requirements for filling the positions. The Indonesian educational sector is a huge establishment relative to the IEES and EPP resource leverage and this fact has also created special problems. Geographically, Indonesia's archipelago of islands is spread over an area as large as the U.S., a fact which makes the careful monitoring of activities both difficult and expensive. As these problems have been identified and addressed, the potential impact of EPP has increased.

What lessons have been learned?

Based on the summaries presented above, the following lessons learned can be drawn from EPP experience in Indonesia:

- Project success is dependent on an effective Chief of Party. This person must be able to coordinate activities, maintain continuity of consultants, establish a cooperative rapport with a wide array of parties, and, most importantly, maintain a participatory and low profile approach to involvement.
- There is a need to broaden the base of project-effort without diminishing existing relationships. Progress towards efficiency goals requires building bridges to many educational subagencies.

- Continuous monitoring of activities is critical to assure consistency between overall goals and objectives and the way in which they are operationalized within the specific policy context of Indonesia.
- Utilizing personnel with broad Indonesia country experience and maintaining their continued commitment over the life of the project has proven to be absolutely critical for success.
- Apparently slow progress at times should not provoke negative responses. Well-considered project responses to immediate problems will result in movement towards efficiency improvements. This context requires project staff with a culturally-sensitive and consistent management style.
- Close supervision of extremely complex project activities is essential to assure integration and management support. Clear articulation of goals and strategies and firm adherence to plans with Indonesian counterparts are required to ensure both short-term and long-term goals.

EPP success is evident at a number of educational levels and through a number of products. There has been a striking improvement of the policy analysis and planning capacity specifically within Balitbang Dikbud, but more generally within the MOEC as a whole. The products of EPP research activities have been planned and conducted jointly by IEES and MOEC policy researchers and have resulted in a series of published policy issues working papers which now serve as vehicles for policy dialogue and decisionmaking in the development of the coming 5-year plan. Finally, there has been successful implementation of the educational management information system at the national, provincial, and district (Kabupaten) levels in the six pilot provinces of South Sulawesi, West, Central and East Java, Nusa Tenggara Barat, and West Sumatra.

2.0 PARTNERSHIP OF THE USAID IMPROVING THE EFFICIENCY OF EDUCATIONAL SYSTEMS (IEES) AND THE EDUCATIONAL POLICY AND PLANNING PROJECT (EPP)

Background and Overview

The two projects, Improving the Efficiency of Educational systems (IEES) and Education Policy and Planning (EPP), have taken place in a most opportune and critical period of the Ministry of Education and Culture, Indonesia. 1994 will mark the beginning of a second 25 year planning period, in which Indonesia will step into the stage of "take-off." At such an epoch-making juncture, the achievements thus far and the future achievements by these two projects will assuredly make significant contribution to the development of the Indonesia's education system for the coming era.

Both IEES and EPP were launched during the period of Repelita (5 Year National Development) IV, IEES about one year prior to EPP. From the outset, these two projects have been working side by side to form a successful partnership, engaged in areas of policy research and analyses, knowledge building, policy formulation, long-term planning, and the development of institutional capacity of Balitbang Dikbud (Office of Educational and Cultural Research and Development).

During the period of Repelita IV (before these two projects were initiated), the main focus of Indonesia's education system was opportunity and access. Because the issue of "educational opportunity" was the dominant and overriding issue of the government at that time, other issues were, more or less, given less priority. In 1985, IEES conducted a comprehensive sector assessment, which formally emphasized new issues and concerns. Among others, Quality, Efficiency, and Relevancy were highly stressed in conjunction with the education system. As a result, IEES and EPP organized their respective research activities in line with these newly emerging issues. The Quality of Basic Education Study, Vocational-Technical Quality and Efficiency Study, Review of Curriculum, Teacher Improvement, Internal and External Efficiency of the Education System, to name a few, are some of the studies conducted in response to these new issues. These studies have been very helpful for the enhancement of the quality of MOEC's policy research/analysis activities. Furthermore, their outputs/outcomes were highly influential to the formation of Repelita V, the mid-term implementation plan of the education system for the next five years. Some other issues also emerged, such as educational management, equality/equity, and local participation (e.g. SLEC). However, because the above issues were rather dominant, attention to these issues was less significant.

Institutional capacity of Balitbang Dikbud has grown remarkably. First, the educational level of its staff members has risen considerably. Moreover, a cadre of highly educated and competent individuals have been secured and assigned with strategic tasks, resulting in the enhancement of efficiency and productivity of the office. Second, the adoption of advanced technologies has helped the transformation of the office environment from traditional to modern. In all, the future of Balitbang Dikbud as a policy and research institution is bright and promising.

The MOEC now has to prepare for the future. As mentioned, a new era is in the offing for Indonesia: the beginning of the second 25 year plan cycle, Repelita VI, and a new administration. Along the line, the MOEC will face with challenging tasks, such as the implementation of a year basic education and curriculum reform. It is yet too early at this stage to accurately describe the framework or blueprint of the new era's education system in toto. However, some issues can be mentioned with certainty. First of all, the current

major issues such as quality, relevancy and efficiency will continue to prevail in the coming period of Repelita VI. Although these issues have been vigorously challenged, the nature of the issues is too complex to be resolved in a straightforward manner. "External" efficiency may become a more crucial issue than others, as the linkage between education and the economic/industrial sectors becomes vital for the national development. In addition, "management" will surface as another dominant issue. In fact, the Government of Indonesia hag already been looking for alternative means of improving its administrative effectiveness. Various concepts or topics such as centralization vs decentralization, resource allocation, community participation and utilization of local resources, privatization, strengthening local capacity, are frequently alluded to of their pros and cons. Also, in line with a tenet in the Broad Guidelines of State Policy (GBHN): "Education is the joint responsibility of the Government, community and family," the corresponding operational and management scheme should be planned in the near future. The second 25 Year Plan is expected to deal with all these issues in the long term perspective, while Repelita in the mid-term.

All on-going or future IEES and EPP activities will be very relevant to the issues and concepts mentioned above. They will be useful in resolving the relevant issues of the present time, but will also become valuable inputs to the future course of action. In fact, a number of activities such as the Low Cost Learning Materials (LCLM) and Teacher Improvement Study of EPP, and Provincial Sector Assessment and Strengthening Local Educational capacity (SLEC II) of IEES have been under way or will be carried out in these terms. On the other hand, a new project (PRESS), a succeeding project to EPP, is already on the drawing board. This new project, based on the knowledge, capacity and experience attained through IEES/EPP, is expected to search for innovative educational management, with its focus primarily on privatization, resource allocation, and decentralization.

As has been alluded, IEES and EPP have been successfully collaborating as partners throughout the project period. The partnership between Balitbang Dikbud and IEES/EPP has also been as satisfactory as the IEES/EPP partnership. It is hoped that such a productive and successful partnership will continue for Indonesia in the coming years.

The Status of the EPP Project

The EPP project was initiated in 1985 with the original goal of improving the quality of education in Indonesia through the formulation of better policies and long-term plans based on more complete and accurate information and better analysis of that information. To achieve the goal, the project sat five specific strategies:

1. Increasing the capacity of Ministry of Education staff to generate, process analyze educational and cultural information, as well as to undertake policy research, policy analysis and long-term planning;
2. Strengthening the internal management and organization of Balitbang Dikbud, effectively linking its proposed three main components of educational research, policy analysis and information systems;
3. Special studies to support research and analysis of key issues affecting the development of the educational system.
4. Upgrading the capacity of Pusat Informatika within Balitbang Dikbud to serve the policy research, analysis, and planning needs of Balitbang Dikbud itself including the development of an information system to meet those needs;
5. Further development of planning and information systems at the provincial levels.

At the outset, the duration of the project was set to be five years, that is, until September 1990. However, based on the outcomes of first midterm evaluation, which was conducted in mid-1988, the project was extended by two more years to September 1992.

The evaluation report confirmed the validity of the project philosophy along with its goal and objectives, and positively recognized the achievements made thus far. The project, while achieving its objectives step by step, also scrutinized the education system with a new set of criteria such as quality, relevancy and efficiency. Along the line, the scope of "education" was naturally broadened, its domain of responsibility not only limited to the pedagogical process itself, but also directly linked with related sectors such as economy, manpower and industry. Most policy research/analysis activities of the project were conducted in such perspective.

Meanwhile, the project made notable accomplishments in the area of institutional capacity building. Domestic and overseas training programs have been well conducted, resulting in the improvement of the quality of Balitbang Dikbud's staff members. Also, MIS capabilities were established in five provinces which were selected as pilot sites.

In 1989, a second midterm evaluation was conducted resulting in a project amendment, in which another set of concepts were introduced and incorporated: market oriented analysis for external efficiency and private sector participation. To implement or experiment such concepts, the project direction was revised as follows:

1. An analysis of options for the training and retraining of over 1.3 million Indonesian teachers that will include and focus upon cost recovery and/or the use of private teacher training institutions;
2. A body of research that clearly explores MOEC options for the delivery of improved instructional materials that will include market surveys for the encouragement of private materials production and distribution;
3. Rationalization of educational output as a function of labour market demand;
4. Improved capacity at the national and provincial levels to conduct policy analysis and to formulate policy options;
5. Replication of the EMIS in the country's remaining 22 provinces through the utilization of the five existing EMIS centers as training sites.

To implement these new objectives, additional resources were added to the project and the activities were realigned. Below are some of the activities carried out in line with these new objectives:

a. Low Cost Learning Materials (LCLM)

The objective of this activity is to promote educational progress by finding functional ways for the people in the private sector to share with government in the production and distribution of learning materials. The EPP project conducts the activity on an experimental scale to find the feasibility. Outcomes of this activity will become vital input to the next project (PRESS), in which the realistic strategies for the nation-wide dissemination will be deliberated. This activity includes three major components: Development of Learning Material Enterprise, Development of Textual Materials for Impoverished Communities, and Policy Studies to Facilitate Private Sector Production of Learning Materials.

b. In-Service Training of Primary School Teachers

The improvement of the quality of teachers, especially, of the primary school level is a priority national policy, which is mandated in Repelita V. The objective of this study is to launch policy research and development activities related to the Indonesian Government's effort to provide professional upgrading to all of its current primary school teachers through inservice training (D2 course). This activity will support two studies : a study of D2 course financing and private sector involvement, and action research related to D2 training in remote areas.

c. Sector Assessment Training

In response to the emerging needs, a series of workshops was devised to train Indonesian staff to secure a cadre of Indonesian professionals at the national, and provincial levels competent to conduct sector assessment. This is a joint activity between EPP and IEES.

d. External Efficiency

This activity examined educational cost, quality and efficiency to ensure an appropriate emphasis on market oriented analysis of the labor demand vis-a-vis educational output. This activity includes three components: analysis of cost data to determine the rate of return to education and the extent of fit between education and employment, the development of a computerized school aid formulate guide the GOI's financing of schools, and a feasibility study of developing job placement office in context of improving the external efficiency of education.

e. Quality and Efficiency of Vocational/Technical Education (QEVT)

The principal components of this activity are eight longitudinal studies of senior secondary graduates (75% vocational/technical, 25% academic), and a comprehensive senior secondary quality survey. In addition, two other surveys are to be completed: A survey of graduate's employers; and an indepth survey (with interviews) of those graduates entering "technology linked" occupations or post-secondary education tracks. The prime objectives of this study are:

(l) To undertake an empirical study of the transition from senior secondary education to employment, with the emphasis on vocational/technical graduates. And, through that study to determine the extent to which the subsector is externally efficient.

(2) To determine what factors effect quality education in the senior secondary vocational/technical education subsector, and to assist the degree to which quality education relates to external efficiency.

f. EMIS Activity

In the first phase of the project, EMIS was established in three pilot provinces on an experimental basis. Later, pilot sites were expanded to five in compliance with the recommendations of the first mid-term project evaluation. With the satisfactory outcomes of the experimentation, the MOEC decided to extend EMIS to all 27 provinces. Progress among these provinces thus far varies: some have made a satisfactory progress even to be technically self-supportive, while others still require extensive technical assistance from the center. However, it hag been assured that EMIS is a critical institutional function to be established at the local level, which other policy and planning functions should be based on. The EMIS function be fully institutionalized for the provincial level before the EPP project is completed.

At the central level, Pusat Informatika has established a remarkable EMIS center, equipped with a mini-computer (VAX 6000) serving as the central data base computer, and more than 50 micro computers serving for various purposes ranging from the document production to policy analysis and research. Likewise, Data Bank, a service unit for qualitative data, has been proven very useful for policy related activities. Since its establishment, EMIS has been serving as the foundation of all policy research activities of Balitbang Dikbud.

g. The Development of Long-Term and Mid-Term Plans

As had been alluded in the previous section, the year 1994 is a most momentous year for Indonesia, marking the beginning of the period of the second 25 year plan,

Repelita VI, and a new administration. For this reason, a special committee (Committee for the Development of Second 25 Year plan) was established by a Minister's degree and commissioned to develop the respective plans. All the products produced by the EPP/IEES thus far will be valuable inputs to this endeavor. In this connection, an international conference is planned to be held in 1992.

The Status of IEES

IEES's first activity in Indonesia was the sector assessment in 1985. It was the first comprehensive and thorough assessment of the education system of Indonesia. This assessment generated valuable policy related information, which has helped the MOEC realign its policy focus and priority. Furthermore, the Country Implementation Plan (CIP) of Indonesia, the blueprint of the IEES activity plan, was established based on the information from this sector assessment.

It may be useful to recollect how the sector assessment diagnosed the status of Indonesia's education system in terms of its major constraints in 1985:

1. a policy decision to rapidly expand vocational/technical education without a clear linkage to actual manpower needs or careful assessment of resource capabilities;
2. a lack of evaluation research information on the outcomes and cost effectiveness of educational improvement efforts;
3. the need for expansion and quality improvements in the secondary education subsector;
4. the difficulty of recruiting and retaining teachers in the remote areas; and
5. the need for balancing deconcentration of responsibility for educational programs to allow more participation in planning and curriculum development by the regions without loss of central control over key decision-making.

Following the sector assessment, IEES developed the Indonesian Country Implementation Plan, which covered all the activities to be carried by the end of the IEES phase I (May 1989). The plan consisted of two groups of activities:

Group A: Research and development activates to implement specific analyses of data to find empirically based ways of increasing internal efficiency, external efficiency, and equity

Activity 1 : External Efficiency in Education

2 : Policy Study on the Cost of Quality of Vocational/Technical Education

3 : Study on Teacher Incentives

4 : Community and Private Financing sources

Group B: Technical and institutional support services to help implement and sustain this planning capacity.

Activity 5 : Computer Model Development

6 : Analysis of EBTANAS Data

7 : Library and ERIC Research Support System

All these IEES activities were carried out in collaboration with EPP. As most activities in the group A were policy research oriented, their outputs/products were very useful and informative for the relevant policy formulation. On the other hand, as the activities in the

group B were, more or less, capacity building in nature, they were heavily mingled with related EPP activities. The IEES phase I was culminated in a IEES/MOEC National Seminar which was held in 1989 at Jakarta. This seminar, which was attended by MOEC's top level administrators and renowned international scholars, was the occasion to ascertain the usefulness and contribution of IEES/EPP for the development of the Indonesian educational system.

Since the Phase II started in July 1989, IEES has adjusted the focus of its support in congruence with the priority and evolving needs of the education system of the country. Accordingly, IEES has realigned the structure of activities in the following manner:

1. The Area of Policy and Planning

   a. Curriculum Development

      The National Education Law of Indonesia, which was promulgated in March 1989, stipulated many innovative reforms and restructuring, including an extension of basic education from 6 to 9 years and a curriculum reform in 1994. This curriculum reform will emphasize its relevancy to national development, needs of the community, development of science and technology, and national culture, based on the national ideology (Pancasila) and the 1995 Constitution. Under the circumstances, IEES is to support this curriculum reform activity by conducting relevant research activities. In this connection, two activities have already taken place: An Analysis of the Status of Curriculum Reform and Text Production in Indonesia, and Curriculum Reform Activity (Science and Mathematics). IEES is expected to continue its support in this area in the future.

2. Knowledge Building

IEES will support the area of knowledge building under two main themes: factors relating to improving the quality of schooling, particularly in terms of teacher and student achievement; and (2) the impact of various kinds of community support for education.

   a. The Quality of and Efficiency of Vocational/Technical Education
   b. Quality of Basic Education

      In conjunction with the Quality of Basic Education Quality Study under EPP, IEES supported the continued analysis and interpretation of the data collected.

      (l) technical assistance in computer analyses, interpret findings, and prepare results for dissemination;

      (2) training in data and policy analyses; and

      (3) relevant policy seminars

   c. Strengthening Local Education (SLEC II)

      In Phase One, IEES conducted a research "Strengthening Local Education Capacity (SLEC), which was aimed at strengthening of parental and societal participation in school activities. It is planned that a succeeding activity (SLEC II) be carried out in the near future. The research design for the SLEC II is on the drawing board, with the aim of identifying ways that local communities can encourage and enhance school quality, equity of access, and student retention.

3. In-Country Education Management Management

In collaboration with EPP, IEES provided technical assistance with the aim of developing institutional capacity for policy and planning areas.

a. Capacity Building

IEES to provided the MOEC with intensive training and technical assistance in the following areas:

(l) policy research design, sampling, and analysis of large data set;

(2) finance and cost analysis; and

(3) sector analysis methodology

b. Sector Assessment Update (discussed in a later section)

c. Efficiency Indicators

During 1991, IEES carried out an activity for the development of an indicator system of education efficiency appropriate to the specific organizational and policy context of Indonesia's education system. This system, linked with EMIS, is to produce baseline indicators assessing the education system in terms of quality, efficiency and equity. The MOEC, as a result, published a booklet "Education Indicators, Indonesia." It is expected that the booklet will be updated on an annual basis.

The IEES Partnership and the Future of the Education System of Indonesia

For education, Indonesia has made remarkable progress in its first 25 year plan period. For example, the number of primary school students more than doubled from 12,802,000 at the beginning of Repelita I (1969/1970) to 26,529,000 (107% increase) at the beginning of Repelita V (1989/1990). During the same period, the increases of junior and senior schools were even more remarkable from 1,369,000 to 5,852,000 (327% increase) and from 462,000 to 4,030,000 (772% increase) respectively. In the case of tertiary education, the number of students increased from 450,000 at the beginning of Repelita III (1975/1976) to 1,458,000 (224% increase) at the beginning of Repelita V. Along with the increase of students, other related areas such as teachers, classrooms, laboratories, school libraries, books, teaching/learning aids, etc., also have been proportionately augmented.

However, there are still many difficult tasks ahead. As well known, the educational setting of Indonesia is a most complex one: a most populous country, the largest archipelago, an enormous ethnic variety and associated traditions and values, immense socio-economic heterogeneity. What is the optimal way to conduct an education system in such a complex setting? The answer may not be derived easily or quickly. It may gradually emerge in the process of building capacity, strengthening educational infrastructure, building knowledge, and continuous endeavor for the improvement of the system. IEES and EPP have greatly contributed to Indonesia's education system in these terms.

Recently, a major policy focus is placed on "participation." In this connection, various forms of "participation" are under deliberation: community and societal participation, private sector participation, cross sectoral coordination, etc. Obviously, a huge household like Indonesia's education system cannot be properly managed or taken care of by the government alone. In view of the fact that education is an enterprise of participation by all parties involved, attention to this issue seems to be appropriate and timely. It is hoped that IEES/EPP include this issue in their research agenda to assist the MOEC in the development of appropriate policy strategies for it. In fact, "participation" should be a conceptual component within the broader term "management," which is likely to become a major policy dimension in the coming era.

The EPP project will be completed in September 1992, likely succeeded by a new project, PRESS (Privatization of Educational Supporting System). As the focus of this new project is the participation of the private sector, it is hoped that IEES again establish a

partnership with this new project, and render useful assistance in the areas of research, knowledge building and policy studies.

Education is a long term enterprise. Therefore, impacts or outcomes of an intervention is usually not known immediately. However, the research design and approaches taken by IEES should be commended for several reasons: 1) long-term commitment in which the project can understand the nature of the education system concerned and adjust its project activities accordingly, 2) multi-country approach by which relevant information can be shared among member countries, and 3) accelerated knowledge transfer to project countries in the process of collaboration between experts and host country staff members.

3.0 DEVELOPING AN INTEGRATED MANAGEMENT INFORMATION SYSTEM

There are three major components under the EPP project: (1) to help the MOEC develop an integrated education management information system (EMIS); (2) to help the MOEC enhance its policy research and analysis capacity; and (3) to support the MOEC institutional development at the national and provincial levels through training.

Each of the above components is being implemented at the national level and in three pilot provinces. EPP technical advisory staff work closely with counterpart Indonesian staff as part of a collaborative process of developing institutional capacity while implementing the project.

As a part of the first major component of the project (to help the MOEC develop an integrated management information system for policy formulation and long-term planning) the EPP project staff has developed a master plan for implementation of an Integrated Management Information System to support policy and planning.

To guide the development of the integrated MIS for the Ministry of Education and Culture, an EPP Steering Committee was established. This Committee consists of the Echelon I level management from each of the Directorate Generals and staff units such as the Secretary General and the Inspectorate General.

The Steering Committee is chaired by the Head of Balitbang Dikbud and entrusted with the final review and approval of all major project plans and activities, including the MOEC MIS design itself. In addition to the Steering Committee, a Technical Committee composed of Echelon II representatives from the above mentioned bodies has been acting to provide continuous technical direction.

Currently, the Ministry has numerous issues and problems which require the Ministry to develop an effective MIS as a priority task. These are:

- Administrators and Planners in the Ministry need reliable and timely information to comply with their administrative requirements in an effective manner.
- The lateral coordination of data handling in the Ministry is weak which causes duplicated efforts, the wasting of resources and, more critically, data integrity problems.
- In most cases, data management capacity, including data collection, data storage, data retrieval, data flow and data analysis is weak and has to be improved.
- There is an urgent need of developing data handling capabilities in the local education offices, including the Province Offices.
- There is a severe shortage of technical personnel resources for developing and implementing an effective MIS in the Ministry. Training and securing competent technical personnel resources is an urgent task.
- Data utilization activities, compared to those of data collection have been meager in the Ministry. Data should be the dynamic source of generating information which is effectively reflected in the administrative processes, such as planning and policy analysis.
- There is no fully established means of governing MIS activities in the Ministry. Although Pusat Informatik is mandated to be the hub of the overall data related activities, its organizational and management capacity to do so is still developing.

MOEC MIS Operational Concept

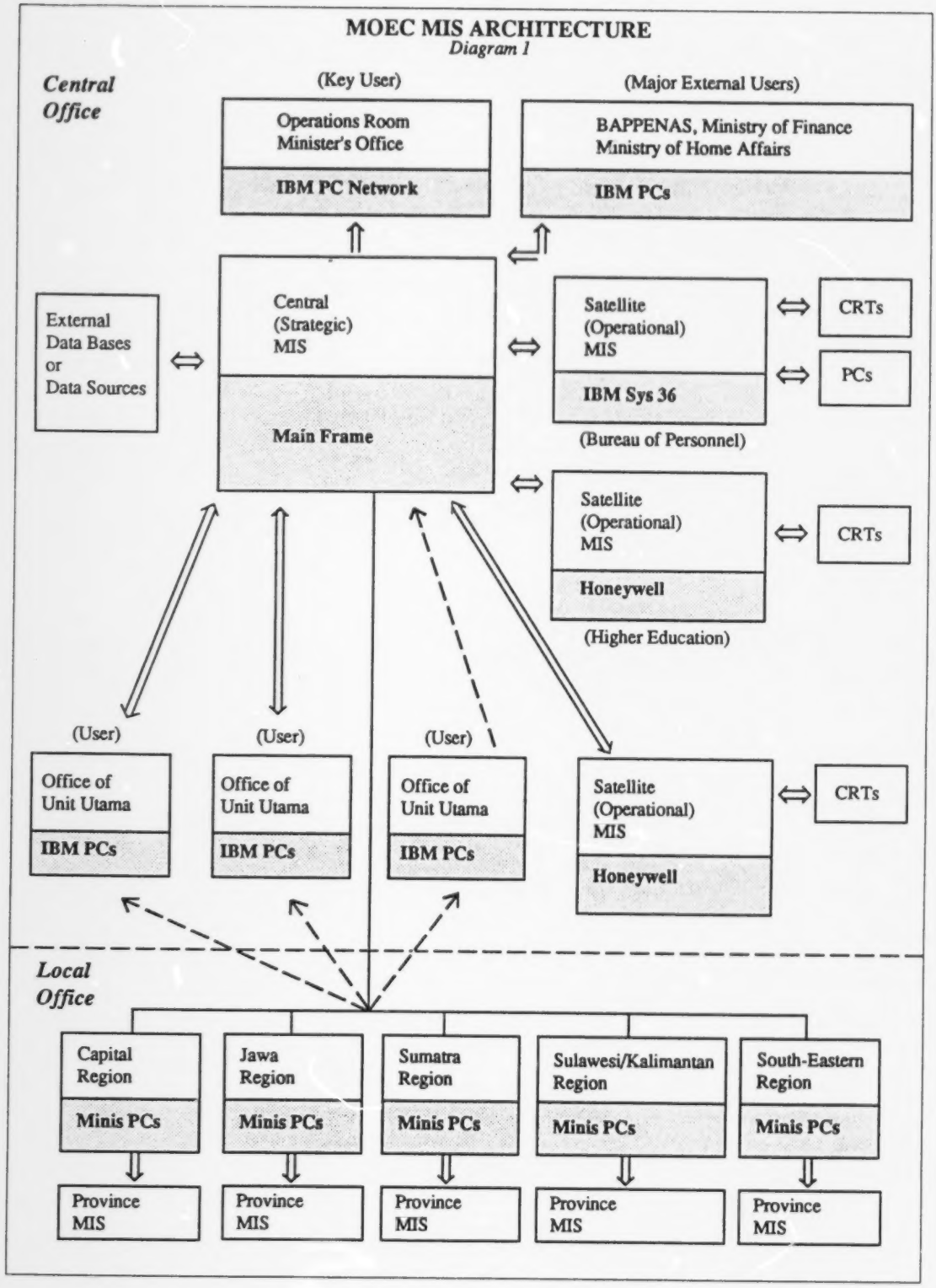
The MIS has been developed under the following conceptual framework:

- From the physical point of view, a management information system (MIS), is a composite of hardware (computer), software (computer program) and brainware (personnel). From the procedural point of view, or the functional point of view, a MIS is a composite of data collection, data processing, information generation and information dissemination. How to organize the physical and the functional entities into a working system is the ultimate issue in the development of a MIS.
- Considering the size of the organization of the Ministry and the functional complexity embedded in it, developing an "effective" MIS is not an easy task. Therefore, the following hypothetical concepts were established as the preliminary framework for developing the MIS in the Ministry.
- To establish a Central (Core) Strategic Data base and its associated computer system in the Pusat Informatik, the central unit of the computer operation in the Ministry, to support policy makers, planners, project monitors and researchers to facilitate and improve their functional performances.
- To deconcentrate or to distribute the operational side of the MIS to each office unit concerned, while the Headquarters (Pusat Informatik) holds the responsibilities of the administrative and managerial side of the MIS, including MIS policy issues, operational standardization and resource allocation pertaining to the MIS.
- The province offices are to evolve to be the hub of the MIS operations for their respective provinces. The Headquarters will support the MIS operations of the provinces by providing technical and advisory assistance and MIS personnel training programs.
- The MIS of the Ministry will pursue active and dynamic information utility and dissemination efforts, taking "information marketing" as its basic strategy.
- The Headquarters will pursue the development of a solid information technology infrastructure throughout the entire Ministerial jurisdiction.
- The Headquarters will promote Inter-Ministerial coordination for exchanging relevant data for promoting mutual benefits. At the same time, the Headquarters will develop an efficient mechanism for Intra-Ministerial coordination.
- The Headquarters will pursue improvement of data availability, along with data quality and timeliness. Data collection instruments and data flow will be scrutinized and improved, wherever appropriate.
- Data communications technology will be established, wherever applicable and cost-effective, to facilitate data flow among agencies.
- Data capturing or collecting will be embedded in the administrative processes, so that data become available as by-products of the normal administrative procedures, rather than having to rely on survey instruments on each and every occasion.

MOEC MIS Architecture

The MOEC MIS consists of several structural components which are operationally and functionally inter-linked to work as a complete system. Those components are:

- The Central MIS
- The Operations Room
- The Satellite MISs


MOEC MIS ARCHITECTURE
Diagram 1
Central Office
(Key User)
(Major External Users)
Operations Room
Minister's Office
IBM PC Network
BAPPENAS, Ministry of Finance
Ministry of Home Affairs
IBM PCs
External
Data Bases
or
Data Sources
Central
(Strategic)
MIS
Main Frame
Satellite
(Operational)
MIS
IBM Sys 36
(Bureau of Personnel)
CRTs
PCs
Satellite
(Operational)
MIS
Honeywell
(Higher Education)
CRTs
(User)
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(User)
Office of
Unit Utama
IBM PCs
Office of
Unit Utama
IBM PCs
Office of
Unit Utama
IBM PCs
Satellite
(Operational)
MIS
Honeywell
CRTs
Local Office
Capital
Region
Minis PCs
Jawa
Region
Minis PCs
Sumatra
Region
Minis PCs
Sulawesi/Kalimantan
Region
Minis PCs
South-Eastern
Region
Minis PCs
Province
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- The Users
- The Regional MIS Network
- The Province MIS

The MOEC Policy and Planning Information System Model (The Central Data Base and Its Support for MOEC Policy and Planning Processes).

The Objectives of the Models:

- To provide policy-makers, policy analysts, planners, project monitors and researchers in the Ministry and related outside agencies with timely and reliable information to improve and/or facilitate their respective functional performances.
- To develop and maintain a data base which dynamically entails relevant data for policy formulation, planning and project monitoring processes in an efficient and manageable manner.
- To provide educators and administrators with informative educational indicators, in addition to routine statistics and reports, to help improve their assessment (problem diagnosis and prescription) of the national education system.
- To develop and implement an active information dissemination scheme to maximize its influence or impact to the policy-making, planning and other related educational decision-making processes.

The model consists of a number of functional components which are the data sources, the Central Data Base, the educational indicator system, the policy assessment and formulation models, the Operations Room (OR), the major information clientele and the major inter-agency activities or meetings to which the information generated from the system would be most effective and useful.

Policy Research and Formulation

Within Balitbang Dikbud, Pusat Penelitian (Center for Policy Research) and Pusat Informatika (Center for Informatics) are the primary organizational elements for education policy research. They are complemented in their policy research and MIS development activities by technical assistance elements, such as those provided by the EPP, IEES, and BRIDGES projects.

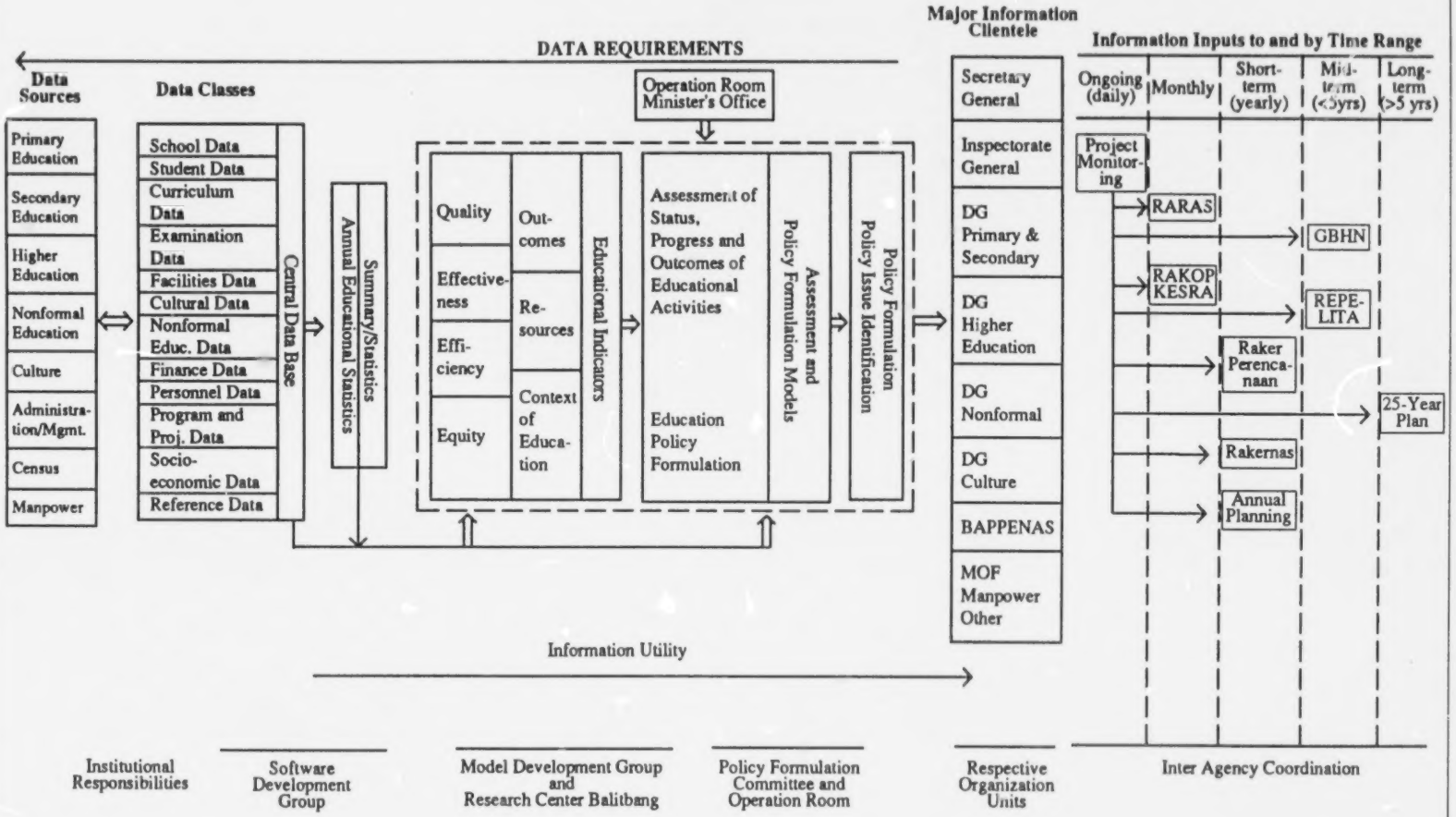
Along with Balitbang Dikbud, other units of the MOEC play a role in identifying and prioritizing policy research issues, initiating and/or conducting policy studies, and reporting findings to policy-makers. This policy formulation network is important for the development and implementation of an effective policy research program by the MOEC. In addition, other educational and research institutions are utilized to comprise research networks with Balitbang Dikbud to provide resources to carry out policy studies.

In order to enhance the policy formulation processes and long term planning activities, the following two functional entities were established.

Model Development Group

- This is one of the most critical elements of the overall MIS for policy formulation and long-term planning. It is here that system performance is assessed, and policy issues are both formulated and addressed. In this process, the critical linkages between consumers (decision-makers) and generators of information are established.

THE GENERAL (STRATEGIC) DATA BASE
AND ITS SUPPORT FOR MOEC POLICY AND PLANNING PROCESSES
Diagram 2



- The policy research models envisioned are not only mathematical or computer-oriented models, they are also a set of organizational relationships, centered around a versatile "Think Tank" unit composed of staff linking information generated by the MIS system to the information clientele themselves.
- Educational indicators are only useful to the extent that they can monitor the health of the overall education system and address key policy issues. To address key policy issues requires a mechanism for the continuous identification and prioritization of problems facing decision-makers.
- Once key issues are identified, they can then be fed to the Model Development Group for the production of indicators from relevant data bases to enable further diagnosis and analysis of the problems, and the evaluation of alternative options which may be taken to solve such problems.

Policy Formulation Committee

- This committee is composed of the Heads of the respective Balitbang Units, i.e., Research, Informatik, Curriculum and Testing. The Head of Balitbang coordinates and leads periodic meetings (weekly or monthly) of the Policy Formulation Committee to discuss issues which the Head brings to the meeting from the weekly Senior Level Ministerial meeting (Rapat Teras).
- The Committee deliberates and decides on key issues to be analyzed by the Model Development Group (MDG); in effect, setting the work program objectives of the MDG. The Policy Formulation committee would further categorize those policy issues which require longer term investigation (research) to be handled by the Research Unit from short-term policy questions to be handled by the MDG.

Project Monitoring.

Although the monitoring of development projects is not directly related to the policy and long term planning process, it is an important input into this process, as well as an administrative guide to effecting the implementation of the national goals and policies of the overall education system. Therefore, the MIS supplies project related information and data on a timely basis to the Secretary General and the Inspectorate General, who are responsible for the ongoing monitoring of development projects and routine activities.

Organization and Management. Pusat Informatik is responsible for the overall MIS annual plan of the Ministry.

It is responsible for furnishing relevant MIS issues to the Computer Advisory Committee, which is the top level MIS advisory body of the Ministry.

Province MIS Model

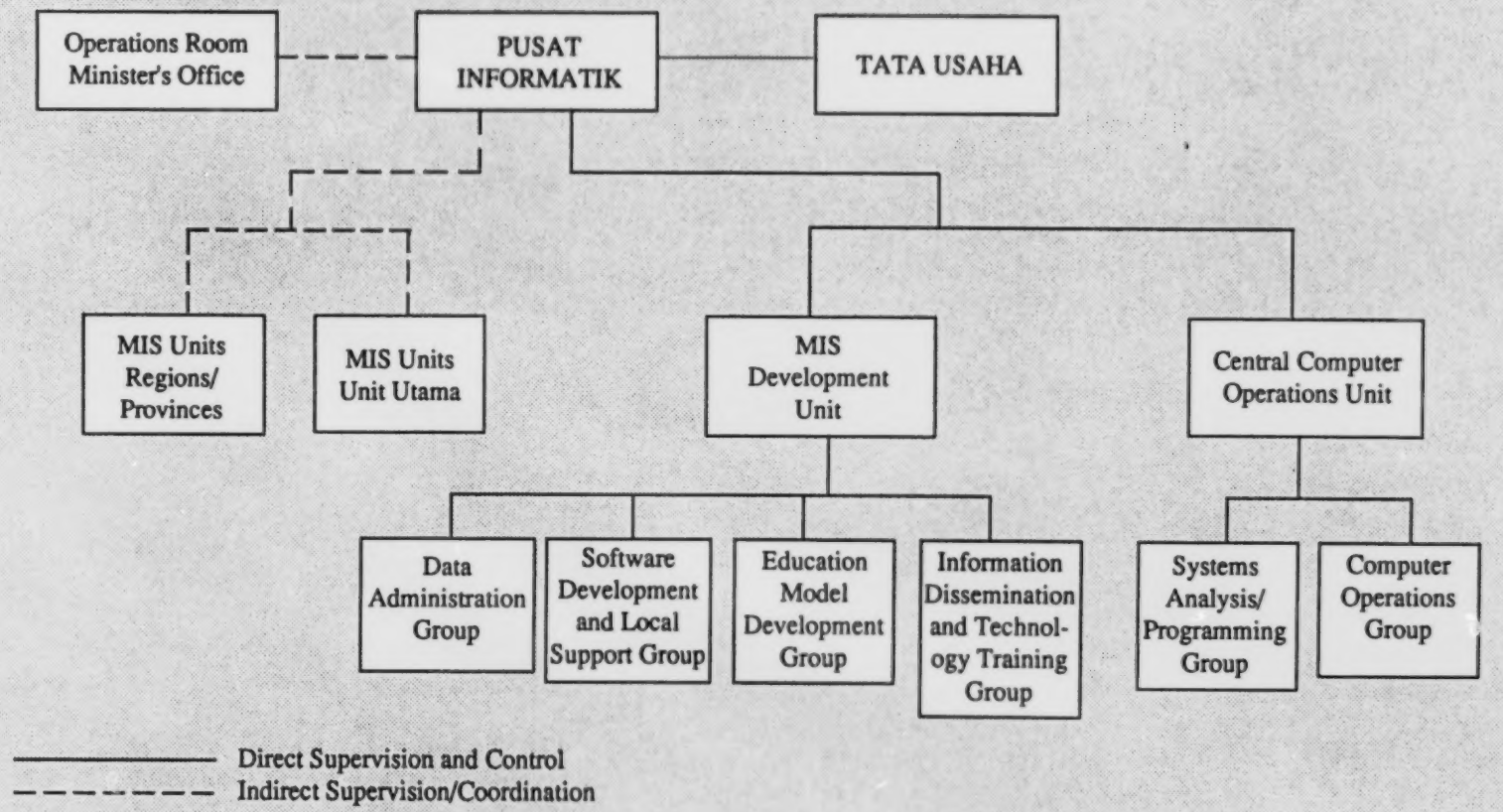
Objectives and Tasks. In the course of the Overall Ministry's MIS development, the Province office is eventually to become the hub of the MIS operations for its own province, and will be responsible for handling its data/information requirements on its own.

The major tasks to be carried out by the province MIS are:

- Development and maintenance of the provincial data base, including data collection, data recording, data editing, data entry and data storage.
- Production of annual education statistics of the province.
- Establishment of the provincial level education indicators to facilitate the monitoring of the province education system.

MOEC MIS ORGANIZATION/FUNCTIONAL UNITS AND THEIR WORKING RELATIONSHIPS

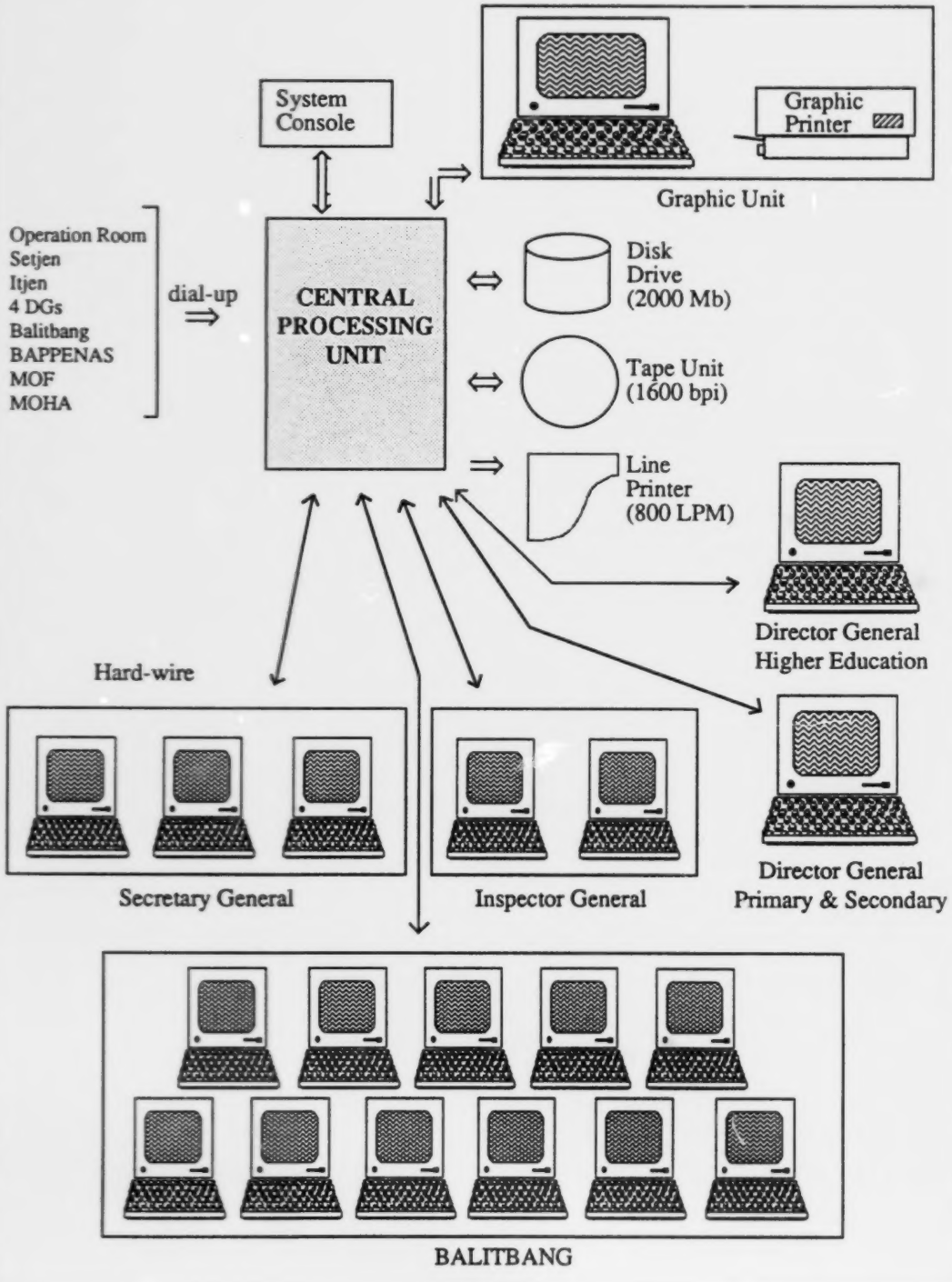
Diagram 3



28

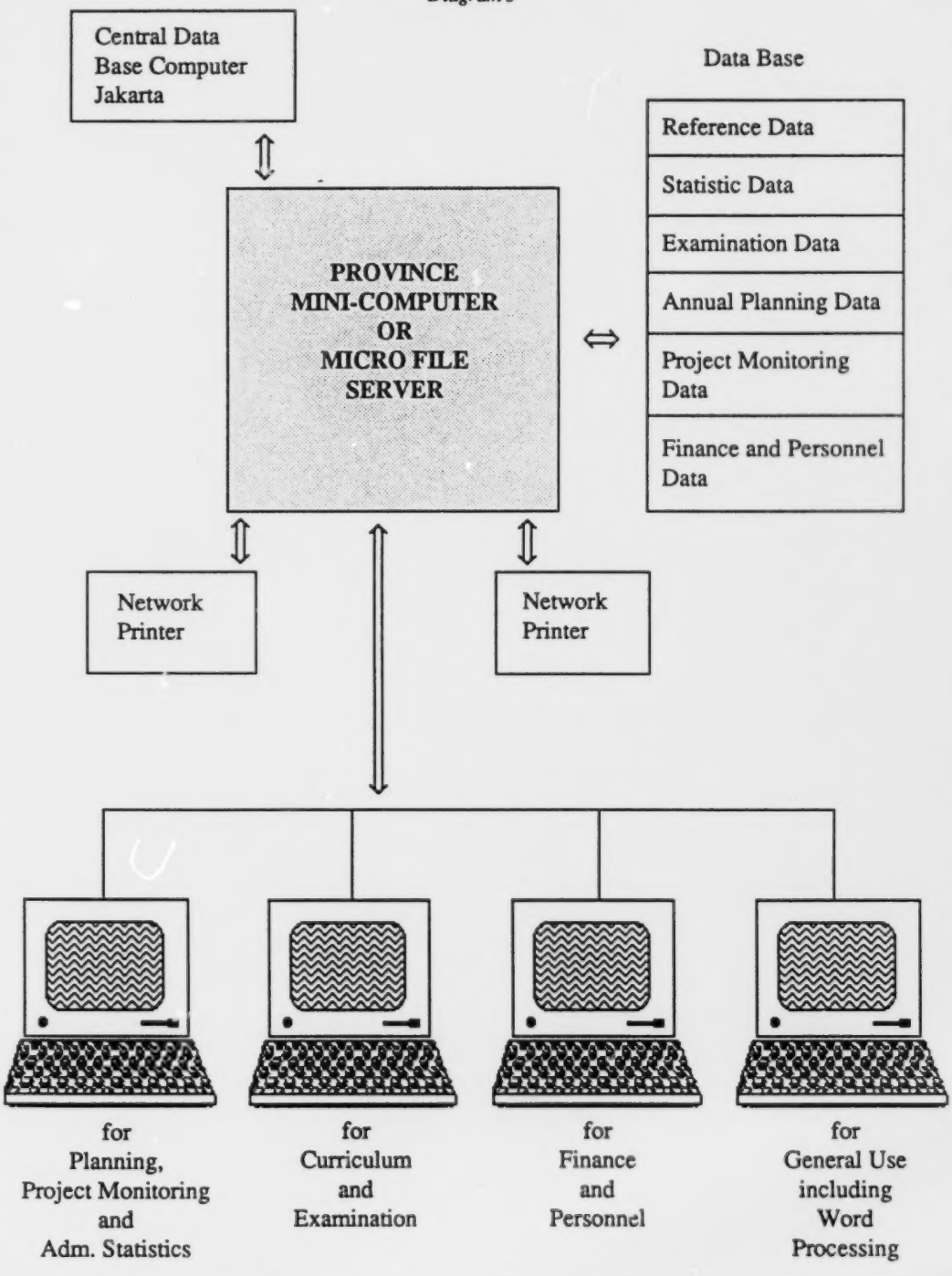
HARDWARE CONFIGURATION

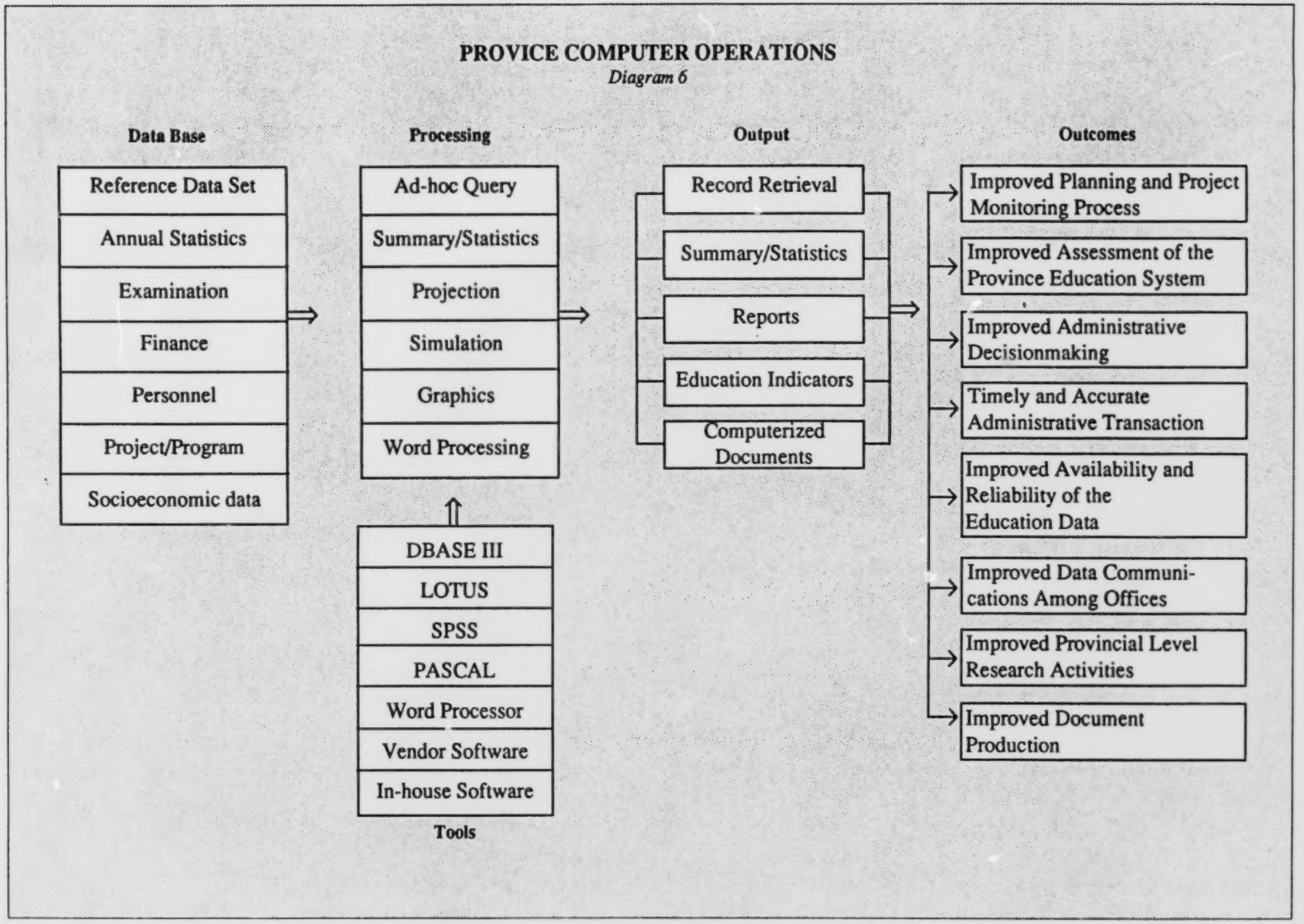
Diagram 4



HARDWARE NETWORK CONFIGURATION
PROVINCE COMPUTER OPERATIONS

Diagram 5




PROVICE COMPUTER OPERATIONS
Diagram 6
Data Base
Reference Data Set
Annual Statistics
Examination
Finance
Personnel
Project/Program
Socioeconomic data
Processing
Ad-hoc Query
Summary/Statistics
Projection
Simulation
Graphics
Word Processing
DBASE III
LOTUS
SPSS
PASCAL
Word Processor
Vendor Software
In-house Software
Tools
Output
Record Retrieval
Summary/Statistics
Reports
Education Indicators
Computerized Documents
Outcomes
Improved Planning and Project Monitoring Process
Improved Assessment of the Province Education System
Improved Administrative Decisionmaking
Timely and Accurate Administrative Transaction
Improved Availability and Reliability of the Education Data
Improved Data Communi-cations Among Offices
Improved Provincial Level Research Activities
Improved Document Production

- Establishment and implementation of computer supported planning and project monitoring processes.
- Data processing support for key administrative areas, including the finance and personnel systems of the province.
- The Ministry will eventually distribute its MIS operations to the province level. However, if the Province is not equipped with a proper level of managerial and technical capacity for MIS, the expected development of the provincial level data/information handling capability is not likely to be realized.
- Therefore, the Ministry (the Pusat Informatik particularly) continually provides expertise, morale and technical support to the provinces until they become fully self-supportive.
- Such a notion of deconcentrating the MIS operations to the province level is deemed appropriate and timely from the viewpoint that developing local administrative capacity has been studied and discussed many times as an inevitable course of administrative development in the future.
- Provided that such a course of deconcentration would eventually occur, establishing an appropriate level of data/information handling capacity will be most useful for such a future prospect.

Information Systems

Information is an output or product of data processing or analysis. An information system can be viewed as the relationship among various components in the data handling processes to produce information. Therefore, the development of an information system is an effort to establish data processing or analysis activities systematically and logically for the purpose of producing information.

The integrated information system entails two major functional components: the production of data/information and the utilization of information. In the sequence of events, the utilization of information is an extended activity of the production of information. However, as mentioned earlier, the production of information should be subject to its utilization. Otherwise, usefulness of the produced information will greatly diminish.

From the physical point of view, an information system is a functional composite of hardware (computer), software (computer programs) and brainware (personnel). From the procedural point of view, it is a composite of data collection, data processing/analysis, information production and utilization. How to organize these physical and procedural entities into a working system is the ultimate issue in the development of an information system.

The Ministry information system is called "integrated". The word "integrated" carries several conceptual connotations in this plan. The information system concerned should be a well organized functional integration of data processing and policy analysis and planning activities of the Ministry. Therefore, it includes policy analysis and planning although policy analysis and planning are not part of the ordinary context of an information system. Second, the information system should eventually address the issue of integrating all the data processing activities in various offices in the Ministry in a coordinated manner. Third, there is an urgent need to develop MIS technical capacity in the local offices of the Ministry and thereafter, to establish or improve functional and technical linkages between these local offices and central offices in the areas of data flow and information exchange. Much has been achieved towards establishing an integrated system:

1. *Data collection mechanisms established* to supply required data in a reliable and timely manner. Data collection instruments, data flow and data collection schedules should be well designed, organized and coordinated among all the units involved in the data collection process.

2. *A computer system established*. A system powerful enough to process and analyze the collected data efficiently in order to produce required information. It should also entail a sufficient level of data storage to accommodate comprehensive data items needed for policy analysis and planning activities in the Ministry.

3. *A sufficient level of technical personnel capabilities developed* to implement such an information system. Pusat Informatika contains a wide range of technical skills and disciplines including data collection techniques, computer related technical skills, and data analysis and research capabilities. Furthermore, an advanced level of policy analysis capability has been developed to carry out policy analysis activities which will be an integral part of the information system of this plan.

4. *An appropriate organizational and management structure established* to accommodate such an information system and maintain its operation on a continuing basis. In this connection, the current organizational structure of Pusat Informatika and its management system is reviewed and reorganized as necessary. At the same time, the working relationships between Pusat Informatika and other equivalent units in the Ministry will be consolidated to improve data/information flow. The possibility of establishing an appropriate level of data processing in local offices, particularly in the provincial offices, will be continually explored. The data/information collected and shared among related Ministries is another critical issue to be addressed in this plan.

Strategy for Developing the Information System

The integrated information system includes data processing, related policy analysis and planning activities, and required staff training. The objective is more than just to install computer processing facilities to process "numbers" easily. It requires a viable institutional scheme to incorporate an advanced level of technology into the Ministry's administrative process in order to improve policy related activities.

Since EPP began, numerous discussions, workshops and experiments have been conducted and the opinions of experts have been sought in order to look for some basic strategies for developing of the information system. The general precepts resulting from those efforts are listed below and form the preliminary framework for the system's development.

1. *Establishment of a central (strategic) data base and its associated computer system in the Pusat Informatika*, to support policy makers, planners, project monitors and researchers in facilitating and improving their functional performance. Such a data base will initially be organized with data items listed in the annual education statistics and those of key administrative areas. The data base will be continually updated and improved to meet the information needs of its clients.

2. *Decentralization of the operational side of the information system to each office unit concerned*, while the headquarters (Pusat Informatika) holds the responsibility of the administrative and managerial side of the information system(s), including MIS policy issues, operational standardization and resource allocation.

3. *Evolution of the provincial offices to become the hub of the MIS operations for their respective provinces*. Pusat Informatika has supported the MIS operations of the provinces by providing technical and advisory assistance and personnel training programs. The establishment of MIS capabilities at the province level is viewed as

critical not only to assist the MIS activities of the central offices, but also to strengthen local administrative capacity.

4. *Active and dynamic information utilization and dissemination* efforts, taking "Information Marketing" as the basic strategy. In this regard, all possible linkages established between the information generated by the system and the relevant clientele.
5. *To develop a solid information technology infrastructure throughout the entire Ministerial jurisdiction.* The primary targets are the selected provincial and central offices. Eventually, such a technology capacity should be established in all the offices in the Ministry, including the district and sub-district levels.
6. *The Pusat Informatika will promote inter-Ministerial coordination for exchanging relevant data.* At the same time, the Pusat Informatika will develop an efficient institutional mechanism for intra-Ministerial coordination.
7. *The Pusat Informatika will pursue the improvement of data availability, along with their quality and timeliness.* Data collection instruments and the flow of data will be scrutinized and improved, wherever appropriate.
8. *To apply data communication technology whenever applicable and cost-effective* in order to facilitate data flow among agencies.
9. *To embed data collection into the administrative processes* so that data becomes available as by-products of normal administrative procedures, rather than having to rely on a survey instrument on each occasion.

The overall model depicts the major activities and sources of inputs, and their functional relationships. It shows that planning and management activities should more or less depend upon the information generated from the data base, while policy formulation and subsequent policy decision-making should be based on the outcomes of the appropriate policy analysis which should, in turn, be the process of observing, analyzing and synthesizing relevant inputs, and generating outputs (policy decision options).

Data collection is a most critical activity for an information system. Data is the raw material which produced information. To be useful, data must be relevant, accurate and timely. If any of these features is lacking, it will lessen the value of the information produced and the usefulness of the information system.

Currently, a major data collection activity in the Ministry is the production of the annual education statistics. Every year, Pusat Informatika, in collaboration with the Offices of the Directors General, conducts large-scale data collection in primary education, secondary education, higher education, non-formal education and culture. In spite of its enormous potential value as a source of information, the actual usage of this data base is very limited because it is not readily available or it lacks reliability.

In general, data collection is not a simple task. There are many obstacles which can cause unsatisfactory outcomes. In the case of the Ministry, data collection is very difficult, primarily because of the target of the data collection is immense. Major problems which the Ministry generally encounters in its data collection activities are:

a. Excessive volume of data
b. Data duplication and redundancy
c. Data validity/accuracy
d. Data delivery (tardiness and lack of response)
e. Data relevancy

In the course of developing the integrated information system the problem areas have been carefully scrutinized to ensure that data collection activities are conducted in a way to ensure maximum productivity. One of the urgent tasks was to review the current data collection instruments and improve them as appropriate. Another is to review the data flows and optimize them. The promotion of effective coordination for data collection among diverse units in the Ministry is another important task for the Pusat Informatika.

Data processing – data analysis is the step in which the collected data are organized, processed and analyzed to produce information. The main function of this step can be divided into three areas: (1) to organize the collected data and store them in the data base, (2) to process relevant data and produce information for planning and management and (3) to provide timely responses to policy analysis activities. While the information needed for planning and management is more or less routing, the information required for policy analysis activities is generally unpredictable. Because the main objective of the information system is to support policy formulation and planning activities, the data processing system should be equipped with various means of analyzing data including statistical analysis, modeling, projections, simulations, and resource allocations.

The (central) data base, which may also be called a strategic data base, is a dynamic storage system where data are kept. Because of the versatile nature of policy issues, it is not realistic to define the data boundary or scope solidly. Therefore, the data base should be flexible enough to accommodate new sets of data whenever the need arises.

At the outset, the following data areas were established:

a. Basic Education, compromising Kindergarten, Primary School and Special Schools,

b. Secondary Education, comprising General Junior High School, Vocational Junior High School, General High School and Special High Schools,

c. Higher Education,

d. Non-formal Education, Sports and Youth,

e. Culture,

f. Administration and Management,

g. Socio-economic Data Set,

h. International (Foreign) Data Set,

i. Reference Data Set.

This logical classification of the data base helps to understand the scope of the data base and develop the corresponding data plan and its implementation schedule. It will help us to allocate data management responsibilities as appropriate. The technical details of this data base will be further discussed in later sections.

Support for Planning Activities

Planning in the Ministry can be divided into three broad categories: short-term, mid-term, and long-term. Usually, annual budget planning is considered short-term, while the Repelita, the national five year development plan, is considered as mid-term planning. For long-term planning, there is a 25 Year Plan, but its development procedure is not yet clearly laid out.

Annual planning is coordinating by the Bureau of Planning under the Secretary General. The major task in this process is to determine the year's annual budget. The Ministry's budget consists of two lines, one for routing expenditures and the other for

development expenditures. By allocating money to budget items, the outcome of this planning process is the concrete activity statement for the year.

Annual planning is divided into four major phases. The first phase (January-March) is for preparing the plans from the bottom up. Pertinent data are gathered by provincial offices and submitted to the central Ministry. In the second phase (April-June) national guidelines are established from the top down for the budget year. The third phase (July-January) is the period of negotiations of the budget, in collaboration with Bappenas (the National Planning Board) and the Ministry of Finance. In the last phase (February-March) the final budget documents (DIP, DIK) are prepared.

The information system supports and facilitates this overall planning/budget preparation process. It helps by providing pertinent data on a timely basis and by providing simulation reviews of various budget options. To the extent that the provincial information system is developed, there can be a realistic merger of bottom-up and top-down planning.

The Repelita plan is the basis for all annual programming and budgeting. It provides directions for development in line with established priorities. During the development of the Repelita, various quantitative and qualitative data are needed to evaluate current Repelita activities and also to establish new targets for the coming Repelita. Being a five-year plan, the Repelita is actually a policy statement rather than a policy analysis process. The proposed information system provides data and information requirements needed for the evaluation of past and current Repilitas and for the establishment of the coming Repelita.

Support for Management

Management can be defined very broadly to include almost every facet of organizational operations. However, here its scope is limited to monitoring, controlling, and evaluating the program/projects defined under the Repelita. Under the current Repelita, there are 21 programs which are divided into 659 project activities. Monitoring and subsequent evaluation of these project activities have always been problematic, causing enormous management difficulty for the Ministry. The main reason is the lack or tardiness of pertinent information. The information system addresses this issue and improves the Ministry's management capacity.

Policy analysis is the key activity for which the information system is developed. There is a wide variety of information that the Ministry's decision-makers and policy makers require. The function of policy analysis is to process and analyze relevant data in order to generate meaningful information for decision makers.

Policy analysis is not limited to data (quantitative) analysis. It is an inter-disciplinary exercise which is undertaken to generate convincing and implementable policy options, based on a broad spectrum of inputs. As shown in Diagram 3, three are several sources of inputs for policy analysis. Outcomes of planning and management, research findings, societal and cultural settings, community and expert's opinions, etc., are some of the factors to be taken into account in the policy analysis process.

Another data domain is defined as "qualitative data". These data are generally descriptive or narrative in nature. In parallel with the development of the central data base, which is the reservoir for the quantitative data, a data bank will be established to collect relevant qualitative data for the Ministry's policy analysis activities. The data processing and data bank operations are the two basic means of supporting the Ministry's policy analysis activities in terms of data supply. The research bank, which is a storage and retrieval mechanism of all research findings in the Ministry, is regarded here as a part of the data bank.

Operations room (OR) is the strategic information chamber associated with the Minister's office. This chamber is equipped with various information facilities, including

micro computers. The OR is for the Minister and his key staff members to review and discuss relevant policy issues, study their implications and make appropriate policy decisions. This chamber is a result of the Minister's ambitious effort to improve data and information availability throughout the Ministry. How to maintain this chamber's operations effectively is an important task, particularly from the view of information utility.

System Architecture

The agencies associated with the information system as clientele or data suppliers can be divided into four groups" (1) the Minister's Operations Room, (2) the Ministry's internal units composed of Balitbang, Secretary General, Inspector General, Primary and Secondary Education, Higher Education, Non-formal Education and Culture, (3) the regional offices of the Ministry of Education, and (4) a group of related external agencies. The external agencies include Department of Finance, Department of Home Affairs, Bureau of Statistics (BPS), Bappenas (The National Planning Board), Ministry of Labor, international education organizations and others.

As discussed earlier, the Minister's Operations Room is a prime client of the information system. The Operations Room is the forum for the Ministry's policy makers to discuss and review macro-level educational issues and adopt optimal policy options. The information system should be geared to provide the maximum level of information services to this room. The Ministry internal units are also important clientele. They receive timely and accurate information, including the annual statistics. Being the major data collectors of their respective areas, they closely work with Pusat Informatika. The regional offices (in this case, mainly referring to the provincial offices) are expected to evolve to become the hub of data processing in their respective provinces. Because these provincial offices are the main data suppliers to the information system, a reliable data flow mechanism will be established between them and Pusat Informatika. Furthermore, the external agencies mentioned above have roles closely related to the information system.

The most important clients of the system are the Minister and his principal advisors. The Policy Analysis Group of Balitbang Dikbud gauge the status of the national education system and present it to the Minister through the Operations Room. The Central Data Base is replenished with fresh data to maintain its quality as an important information source.

Another important group of clientele is the staff of the principal line and staff units of the Ministry. The information System supports each of these units in their policy and planning activities by providing pertinent information and data analysis services.

Some external offices, although they are not under the jurisdiction of the minister of Education and Culture, are very closely related to the Ministry. The Ministry of Finance, the Ministry of Home Affairs, the Central Bureau of Statistics, the National Development Planning Board (Bappenas), and the Ministry of Labor are such agencies. In view of the fact that these agencies are always working with the Ministry on educational policy issues, it is most appropriate that they are included as formal clientele of the system.

The provincial offices (Kanwil) work closely with the system. The system scrutinized issues related to the provinces and render any pertinent information to them. In the course of system development, the pilot provinces participated in most central activities.

The regular areas of service envisaged to be rendered by the system are:

1. General education statistics or primary education, secondary education, higher education, and non-formal education, and statistics on culture
2. Projections on student enrollment and teacher requirements
3. Manpower planning in education
4. Mathematical/computerized model development

5. Operations research and resource allocation
6. Education indicators.

Education Indicators

One of the useful outputs of the system is education indicators. In a broad sense, all the statistics representing the real world are indicators. However, in a more specific sense, a statistic becomes an indicator when it is useful in a policy context. Thus, although there is no clear-cut definition on indicators, they are defined in the following manner.

An education indicator:

1. consists of statistically valid information related to significant aspects of the educational system and can be a single-value statement or composite index;
2. provides a benchmark for measuring progress or regression over time, or differences across geographical areas or institutions at one point in time, such that substantive inference can be drawn from the presentation of data;
3. is intended, when appropriate, to be representative of policy issues or aspects of education that might be altered by policy decisions;
4. can easily be understood by a broad array of lay people concerned with education; and
5. is relatively reliable and not subject to significant modification as the result of errors or changes in the personnel generating it.

The ultimate objective of the MOEC Policy and Planning Information System Model is to determine how to generate educational information relevant to policy and planning, and how to relay that information to policy makers and planners so that they can assess (diagnose and describe) educational status more accurately. Thereafter, they can reach their administrative decisions on more rational grounds.

How can an indicator or set of indicators be developed to represent the status of the educational system concerned? An indicator, and particularly an indicator system, by which the overall status of the national education system can be diagnosed, should be the composite outcome of taking into account the national goals of education, characteristics of the educational system and its priorities, and the social and community values the educational system is nested in. Therefore, it is proposed that the Ministry develop an indicator system, in the course of implementing the Integrated Information System and incorporate it into the information system, adding, deleting, and modifying the measurement of indicators as educational issues and conditions change.

Pusat Informatika generates a great number of statistical publications every year with more or less standardized statistics, whose actual utility or impact have been judged to be relatively insignificant. Its new strategy of "information marketing" if it is accompanied by succinct, but informative, media-like indicators, may yield positive results.

Improved indicators could help educators or administrators to:

1. monitor changes across time in inputs and outcomes to alert them to potential problems;
2. assess the impact of educational reform efforts using changes in policy at the regional and national levels as naturally occurring experiments;
3. encourage the educational system, or parts of the system, to do better by contrasting the national system with those other nations, or parts of the national system with each other (another way of using indicators is to contrast the outcomes of the

system, or parts of the system, with a goal or standard of quality (e.g., the nation could establish a goal of 90% graduation rate);

4. focus attention on educational sub-systems that may require improvement, such as the vocational education or special education sub-systems; and

5. provide leadership to alter the course of the educational system by changing the outcomes/variables used as indicators. An indicator that assessed higher-order cognitive skills, for example, might influence the focus of curriculum.

Developing an MIS Capacity at Provincial Level

Background

One of the main objectives of developing the integrated information system is to establish an autonomous MIS capacity in the provinces which can help facilitate their planning and management processes. The Ministry will, in this regard, eventually decentralize, or at least distribute, its MIS related operations to the provincial level.

Localizing MIS operations at the provincial level is appropriate and timely because several studies show it is an inevitable development in the future. Provided such localization eventually occurs, establishing an appropriate level of data/information processing capacity at the provincial level will be most useful.

In each of Indonesia's 27 provinces, there is a national sectorial agency called Kantor Wilayah (Kanwil). Every Kanwil of the Ministry of Education and Culture consists of two types of offices. "Bidang" is the office unit in charge of a specific educational sub-sectorial area, while "Bagian" is an administrative supporting unit. There are four Bagian-level offices in Kanwil: Planning, Finance, Personnel and Facilities.

During the first phase of the Education Policy and Planning Project, three provinces (Jawa Barat, Sulawesi Selatan and Nusa Tenggara Barat) were chosen as pilot sites for MIS technology transfer. The Planning Division (Bargian Perencanaan) of each pilot province has been the main unit participating in project activities. IBM PCs were allocated to these provinces and technical training programs have been conducted for selected personnel. During this experimental stage of technology transfer and training, valuable lessons have been learned.

While building local capacity is a gradual process, the provincial staff have been able to learn and apply basic program packages, such as Dbase and Lotus, for the computerization of personnel records, examination results and student flow models. During this experimental stage, it was learned that until these provinces become fully self-supportive, technical and managerial support from the central office (Pusat Informatika) was and will be vital. In the meantime, it is encouraging that the polot provinces have been very enthusiastic about the project's computer applications and have demonstrated their own initiatives on numerous occasions.

Information System Characteristics

One of the targets is to develop a sufficient level of MIS technical capacity at the provincial offices so that they become the hubs of MIS separations for their provinces. This target is important for several reasons. First, it is practically impossible for Pusat Informatika to handle all the national education data in a centralized mode. The data volume and subsequent work load are too excessive. Second, the provincial offices are in need of data processing and analysis capabilities so that they can improve their administrative performance and assist their own sub-regional units. Third, by storing and maintaining data in the provinces on a lowest unit record level, it will become easier to update data and help to improve the quality of data.

The provincial information possesses the following operational characteristics:

1. A satisfactory level of data processing and data analysis capabilities in order to meet information requirements, especially in the planning and key management areas of the provincial office.
2. The data base established in the system serves as the source of data supply to the central and sub-regional offices whenever required.
3. It serves as the data traffic center between the sub-regional and central offices.
4. All the data and information management associated with the system will be in conformity with that of the central data base system in Pusat Informatika.

Provincial Information System Model

The provincial data base is a smaller version of the central data base. It includes reference data, annual statistical data, examination data, financial data, personnel data, project/program data and relevant sassy-economic data of the province. a typical provincial information system consists of four functional components: data base, processing, hardware/software and output.

The data processing capabilities of the provincial system should be flexible and versatile. In addition to general data processing capabilities, the system requires various types of analytic capabilities including statistics, projection, simulation and graphics.

The hardware capacity depends upon the size of the province. For example, large provinces such as Jawa Barat may require a kind of mini-computer, while for others a number of microcomputers would suffice. A typical province is basically allocated 4 microcomputers in addition to a file-server unit and two printers. All these units will be linked up with a network to enable them to share resources. A communications linkage to the central data base in Pusat Informatika proved to be cost-effective.

Provincial Data Base

The provincial data base ideally stores and maintains all the data required by the provincial office. From the global point of view, the provincial data base serves as a sub-set of the central data base in Pusat Informatika. The primary usage of this data base is to generate information which is useful for planning activities in the provincial office. Therefore, during data capturing, priority will be given to data relevant to the planning activities of the province. The data base will also maintain data pertaining to key administrative areas such as finance, personnel and project monitoring.

From the structural point of view, the provincial data base follows the same structure as the central data base. It is divided into two broad data groups: the Reference Data group and the General Data group. In principle, the provincial data base will be the collection of the lowest level unit records, while the central data base is a collection of aggregate or summary data.

For the development of the provincial data base, the following order of priority was established.

1. The administrative unit file (kabupaten and kecamatan)
2. The village (desa) file
3. The school identification file (primary and secondary)
4. The 1987-88 annual statistical data (primary, secondary and non-formal)
5. Census file (population by age and by desa)
6. The finance data file (routine and development budgets)

7. The project monitoring file

8. The individual teacher file (secondary school only)

9. Other data

Scope of Services

There are four distinctive clientele groups for the provincial information system. They are the central offices, the sub-regional offices, regional level external agencies and the provincial office itself.

There is constant data traffic between the provincial offices and the central offices. Most of the central offices, except the Directorate General of Higher Education, solicit the provincial office for data/information. Among them, the most important central office client is Pusat Informatika. The provincial information system should be able to respond to data/information requests coming from the central offices.

One of the visible benefits envisaged in the provincial information system is the possibility of it supporting its sub-regional offices. Up until now, it was practically impossible for the provincial office to supply analytic information to its sub-regional offices. by establishing the provincial information system, the provincial office is expected to act not only as the recipient of data from sub-regional offices, but also, this time, as the regular supplier of pertinent information to them.

Another important client group consists of a number of external agencies at the regional level which are related to the provincial office. Pemda, Bappeda and Dinas are the most important agencies in this regard. The system should be able to meet their information needs.

Last, one of the most important products from the provincial information system is the annual education statistics for the province. The statistics are produced in four areas: primary school, secondary school, non-formal education and culture. They are distributed to clientele on an annual basis. Another important product will be provincial level education indicators which will help provincial officials assess the status of the education system in the province. Also, various projection and simulation activities will be conducted which will support administrative activities of the province, including planning and project monitoring.

Policy Analysis

Definition of Policy Analysis

Policy analysis is an activity which processes data and information systematically in order to produce meaningful pieces of information for the formulation of policy decision alternatives. On many occasions, the distinction between policy analysis and statistical or research activities is misunderstood. It is frequently assumed that statistical or research activities are prerequisites for subsequent policy analysis or that policy research is, in fact, policy analysis. This assumption may not necessarily be correct. Policy analysis is, more or less, an activity in its own right. Therefore, it may be appropriate to view statistical or research activities as adjunct or supplementary to policy analysis.

Policy analysis precedes policy decisions as well as other activities that generate information used for policy analysis. It indicates that there are three distinctive input sources: data base, research bank and data bank. Data base is the storage for quantitative data, research bank is for research outcomes, and data bank is to keep qualitative data. Besides the three sources pointed out above, inputs can come from many other sources such as opinions of experts, observations, field experiences, and public opinions. Therefore, policy analysis is an interdisciplinary exercise which aims at drawing rational policy alternatives, based on a wide range of inputs and advanced analytic methodologies.

The outcomes of policy analysis can be presented in various forms. Descriptive statements, graphs, and indicators are some of these. In fact, the method of presenting the outcomes of policy analysis to policy decision makers is as critical as the policy analysis itself. If the method of presentation is not effective, its impact may be minimal, even if the contents are important. Therefore, policy analysts should contemplate not only the analysis itself but also the method of presentation. Of course, policy makers, in making decisions, do not entirely depend upon the outcomes presented by policy analysts. They have their own views and concerns which may be more dominant factors in making decisions. However, the responsibility of policy analysis is to influence decision makers so that they reach the most rational decision under the given circumstances.

The data/information needed for policy analysis must be accurate and readily available. Therefore, data and information collected from various sources should be stored systematically to they can be retrieved quickly when needed.

Characteristics of Policy Analysis

Policy analysis takes a variety of forms within the education sector, as well as elsewhere. Associated with those different forms are several issues of organization, data management and presentation, and dissemination of its outcomes.

A certain type of policy analysis is fundamentally quantitative and relatively easily amenable to computerized processing and analysis. Others are qualitative in nature and require more descriptive and interpretive techniques. Meanwhile, certain analyses are long term in nature, such as tracing what happens to school cohorts over a period of time, while other analyses may be short term, such as an analysis of the annual budget for a certain project in a certain year. Also, some analyses could be one-off exercises, while others would be on-going or cyclic activities.

Some analyses might be considered very "macro" and mostly relevant to policy makers at the Ministry's headquarters, while others might be more "micro" in nature, and of special relevance to policy makers in the regional offices. Some analyses may require the collection of primary data through surveys, censuses, or experiments, while others might require the transformation of primary data into secondary or tertiary forms to provide indicators or evaluative criteria, respectively.

Institutional Development of Policy Analysis

Policy analysis in the Ministry of Education and Culture is the responsibility of Balitbang Dikbud, which is in charge of research and development activities. It consists of five centers: Pusat Informatika, the Policy Research and Development Center, Examinations Center, Curriculum Center, and Education Technology Center. Among these centers, Pusat Informatika and the Policy Research and Development Center are the two most active units in terms of policy analysis and related research activities. However, most of these activities have been conducted in an ad-hoc manner without any firm institutional or formal mechanism to support them.

To overcome this deficiency, Dr. Moegiadi, the Secretary of Balitbang Dikbud, has established an ad-hoc unit called the Policy Analysis Group (PAG). This group represented by each center of Balitbang Dikbud, was formed to promote better coordination among the centers. Dr. Ace Suryadi of Pusat Informatika has been appointed the group leader.

Although many institutional issues remain to be resolved, it is becoming clear that this group will eventually assume the following specific tasks incorporating the establishment of the agenda, arrangement of presentations, and presentations of outcomes of policy analyses.

1. To identify relevant educational policy issues, prioritize them, and establish the agenda for policy analysis activities.

2. To conduct policy analysis and present its outcomes to policy decision makers.
3. To manage other policy activities including identification of personnel and financial resources, allocation of tasks, establishment of task schedules, and evaluation and presentation of products (outcomes).
4. To provide professional consultations in the area of policy analysis to offices in the Ministry whenever such requests are received.
5. To serve as a liaison officer to each respective center in the area of policy analysis.
6. To serve as the operational manager of the Minister's Operations Room.

This group also serves as the most critical juncture of the overall MIS for policy formulation and long-term planning. It constantly assesses the direction and quality of the MIS and provide appropriate guidance so the MIS can operate in a manner that maximizes its utility to policy and planning activities in the Ministry. This group reports to the Policy Formulation Committee which is discussed below.

Policy Formulation Committee

To identify key issues and ensure their continuous communication to the Policy Analysis Group (PAG), a Policy Formulation Committee was proposed as the central institutional link between assigning priorities to issues and formulating policies between policy analysts and decision-makers.

This committee is composed of the heads of the respective Balitbang units, i.e., Research and Development, Informatika, Curriculum, Examinations, and Education Technology. The Head of Balitbang coordinates and leads periodic meetings (weekly and monthly) of the Policy Formulation Committee to discuss issues which the Head brings to the meeting from the weekly senior-level Ministerial meeting (Rapat Teras).

The Committee deliberates and decides on key issues to be analyzed by the Policy Analysis Group (PAG), in effect setting the work program objectives of the PAG. The Policy Formulations Committee categorizes those policy issues which require longer-term investigations (to be handled by Research and Development Unit) and those requiring short-term analysis (to be handled by PAG).

The Policy Formulation Committee, in its role as communication broker between senior-level decision-makers (Directorate Generals) and policy analysts from the PAG, must ensure that findings of policy analysis are communicated to decision-makers in a continuous and timely fashion. The central forum for this communication is the weekly Ministerial meeting through the technical display capacity of the Operations Room. In addition, other regularly scheduled senior management decision meetings, such as the annual planning meeting (Rapat Rencana) and the annual senior staff review (Rapat Kerja), are considered relevant forums for policy formulation communiques.

The major clients of the Integrated Information System are the main units of the Ministry and the Minister himself, through the Operations Room. These units have access to the core data base and are able to enlist pertinent information as required.

4.0 THE QUALITY OF BASIC EDUCATION

The Basic Education Quality Study

Purpose

The purpose of the Basic Education Quality Study (BEQ) was to provide the Government of Indonesia (GOI) with the information necessary to design policies intended to improve the quality of schooling. More specifically, the objectives of the study were as follows:

- to develop baseline data on variables measuring educational quality so as to permit data analysis on the quality of basic education;
- to identify in-school and out-of-school resources affecting the efficiency of GOI resource allocation policies;
- to identify the variables which significantly affect measured academic achievement in Indonesian, Mathematics, and Science; and
- to develop preliminary recommendations for primary schooling as an input into the long-term planning activities in Balitbang Dikbud.

Sample

The sampling design used in the study was proportionate stratified random sampling. Communities (defined as census blocks) in three provinces (Jawa Barat, Sulawesi Selatan, and NTB) were selected first and census blocks in larger subdistricts had a greater probability of being chosen. Within communities the school attended by most children was selected. Headmasters, teachers, and students and their families at each of the selected schools were surveyed. As a result of this plan data was collected at the following levels: the community, school, headmaster, teacher, student, and his family.

Analysis

At the request of Balitbang Dikbud officials, priority in the analysis was given to developing publishable profiles of the communities, schools, headmasters, and students in the three provinces, and identification of the factors affecting student achievement.

Descriptive Findings

Community Profiles

Across provinces, about half the communities felt that they were of average wealth compared to neighboring communities. More of the communities in NTB than in other provinces felt that they were poor or much poorer than their neighbors. And, in fact, over 62 percent of the communities in NTB reported average earnings of Rp. 50,000 per month or less compared to 56 percent in Jawa Barat and 43 percent in Sulawesi Selatan. Almost all communities, regardless of province or wealth boasted mosques/churches, family planning clinics, and sport halls. Other institutions/services tended to be more available in some provinces than in others. Community health centers, banks, post offices, for instance, were more common in NTB and Sulawesi Selatan than in Jawa Barat.

Despite the evident poverty, community aspirations for children's education were high. Almost 50 percent of the NTB communities aspired for their children to attend higher education, almost twice the number as in Jawa Barat.

School Profiles

The average primary school, regardless of province, was unlikely to have either a library or a health unit. Official teacher and headmaster housing was more likely to be found in NTB and South Sulawesi than in Jawa Barat. Almost all schools (96 percent) had teachers who had graduated from primary teacher training schools. Most teachers operated self-contained classrooms and teacher turnover tended to be low; about one teacher per year dies, retires, or seeks other employment. Scheduled learning time varied little across provinces but markedly among grades. Children in grades 1 and 2 attended school as little has 26 hours per week or an average of 10 hours less than children in higher grades.

The picture of textbook availability was a mixed one. While fewer than eight percent of the schools reported that they had no Grade 1 Indonesian or Math textbooks, only 32 and 42 percent, respectively, reported that they had sufficient numbers of books in these subject areas. Sulawesi Selatan reported the greatest problem with the availability of texts with 77 percent of the schools in the sample indicating that they had either no texts or insufficient numbers. The picture of Grade 6 text book availability was not much brighter. Schools in Jawa Barat were slightly more likely to have Indonesian and Science texts than schools in the other two provinces.

Headmaster Profiles

The typical headmaster was a 46 year old male SPG graduate with 16 years of teaching experience. Most headmasters indicated that they consulted with both their teachers and sub-district leaders when problems arose in the school. Slightly over 60 percent of the headmasters reported that the "existing educational system is still good enough" and 81 percent that current support systems provide an insufficient base for school reform. Eighteen percent (26% in Sulawesi Selatan) agreed that teachers lack the ability to implement the desired reforms.

Teacher Profiles

The average primary teacher was a 34 year old male SPG graduate. He was married and had taught 11 years with 6 years in the current school. More likely than not (59%), he had a second job. About 42 percent of the teachers sampled also had spouses who also worked outside the home.

About half the teachers said they used a mixture of Indonesian and the local language in the classroom and about half said they used only Indonesian. Fewer than five percent claimed to use only the local language instruction.

The teachers in the sample were tested in Indonesian, Mathematics and Science. Teachers from Jawa Barat and NTB scored significantly higher on Indonesian and Science than did teachers from Sulawesi Selatan. Teachers from Jawa Barat scored significantly higher than did the teachers from either of the other two provinces on Mathematics. As might be expected teachers from Sulawesi reported more difficulty in teaching the three subjects than did other teachers. However, the proportion of teachers who reported difficulty teaching were relatively high, regardless of either province or subject. Teachers pointed most frequently to the shortages of teaching materials as the cause of their difficulties.

Family Profiles

Ninety-one percent of the families in the sample were headed by the father and the average size of the household was six individuals. These findings were replicated in each province. The majority of the families reported that they spoke the local language in the home. Sulawesi Selatan was unusual in this regard. Twenty-one percent reported that they spoke Indonesian and 12 percent a mixture of local and Indonesian. Almost six out of every 10 parent respondent's claimed that they had had some primary school (33%) or had

graduated from primary school (26%). There was little variability in parent education across the provinces. Almost 75 percent (higher in NTB 82%) of the families reported an income of less than Rp. 90,000 per month. They also reported spending a average of Rp. 10,000 per month on their children's schooling, with the amount slightly higher in Sulawesi Selatan and somewhat lower in NTB than in Jawa Barat. Variation in the time spent supervising children's studies varied more within province (O to 8 hrs.) than across provinces. The average parent spent 1.4 hours per week supervising homework.

Student Profiles

The students in the sample were almost evenly split between males and females. Ninety percent of the students lived with their parents and another nine percent lived with relatives. Most attended school in the morning. Only 12 percent attended school in the afternoon or rotated sessions.

Overall, 25 percent of students expect to finish primary school, 39 percent secondary school, and 35 percent expected to attend higher education. In general, student expectations were higher in Sulawesi Selatan than in the other two provinces. In terms of achievement, performance on all three tests was on the low side, but performance on Math was the lowest for all three provinces. Mean student achievement in Jawa Barat in all three subjects was greater than in Sulawesi Selatan and achievement in Sulawesi Selatan was greater than in NTB.

Multivariate Analysis

Overall, 46, 34, and 43 percent of the variation in Indonesian, Math, and Science test scores could be explained by the equation consisting of blocks of variables consisting of student, family, teacher, school, community variables. The R-squares for the variable blocks are shown below.

R Squares for Variable Blocks

	Indonesian	***Math***	***Science***
Student	0.0803	0.0658	0.0418
Family	0.1679	0.0946	0.1703
Parental Assistance	0.0820	00398	0.0616
Teacher	0.0471	0.0552	0.0449
Process (student reported)	0.0517	0.0546	0.0711
School (student reported)	0.0031	0.0008	0.0045
School size	0.0035	0.0011	0.0003
Community	0.0064	0.0199	0.0023
Province	0.0145	0.0122	0.0300
Total	**0.4565**	**0.3440**	**0.4268**

As indicated by the R-squares, the most important influence on student achievement is family demographics, while the weakest is school size or condition. This finding is not unusual since parents with higher than average educational attainment and income (two of the variables in this block) rarely send their children to schools in poor physical condition or with poor resources. By the same token, parents with low educational attainment or low

income tend to live in areas with resource poor schools. It is also important to note the relatively large contribution of teacher demographics, teacher competence, and classroom processes on student achievement in a given subject area. Student demographics also proved important in explaining differences in achievement. In fact, had the study included some measure of students' prior ability, the contribution of this block would have been larger.

Quality of Basic Education

This study investigated the quality of basic education in Indonesia in a rather comprehensive way. Employing analytical procedures, the study attempted to examine basic problems and issues related to basic education. The term quality in this study refers to the conception of efficiency of basic education which is assumed to be a "public good" since it naturally is needed by all members of society. Therefore, quality of basic education was examined in terms of effectiveness, equality, and equity of educational opportunity, and the internal efficiency of the education system.

Overall data from the census block questionnaire presents the picture of an overwhelmingly rural society, with families working the fields and receiving relatively few services. Even clean water is a problem for some and inadequate toilet conditions a problem for many. This is the context of Indonesian basic education, where schools are operated and where children learn. The geographic complexity of the Indonesian primary school system requires the comprehensive examination of many basic issues and problems related to improving educational quality. This means that policy makers examining issues in improving the quality of Indonesian basic education must go well beyond the existence of the educational system in the school classroom.

Basic Issues

Educational Access. The participation rate of basic education in Indonesia is extraordinarily high. By 1987, the net enrollment ratio was reported as exceeding 96.5 percent for the 7-12 year-old group and 94 percent for the 6 to 12 year-old group of children. The provision of basic educational opportunity, however, has been concentrated on one dominant delivery system, the regular primary school, (sekolah dasar or SD). In Indonesia, the proportion of SD students is about 90 percent, although this varies from one province to another. The data show that the Madrasah Ibtidaiyah increasingly has played a role in absorbing 7-12 year-old children, up to ten percent of enrollment.

However, the proportion of 6-12 year-old children who have not gained access to school appears to be substantial. The percentage of this age group is 8.3 percent in West Java, 6.0 percent in South Sulawesi, and 9.0 percent in West Nusa Tenggara (NTB). In the total population, the estimated number of children in this group would be 850 thousand in West Java, 200 thousand in South Sulawesi, and 90 thousand in West Nusa Tenggara. These are significant numbers. Therefore, increasing the enrollment ratio in the more populated provinces would be much more complex than doing so in the less populated ones. The more densely populated a province is; the larger the number of children aged 6 and 7 years to be absorbed will be, and the greater the amount of school facilities to be provided will be.

A significant change in the dominant age of the first grade cohort in Indonesia's primary education system was shown in this study. The change is from 7 to 6 year-old dominant groups of first graders. The data collected in 1987 and in 1990 show that the proportion of 6 year-old children enrolled in primary school has increased substantially, from 26.4 percent in 1987 to 40.5 percent in 1990.

Internal Efficiency. The high enrollment ratio would not necessarily reflect a real opportunity to learn, unless the education system itself is internally efficient. The time

series data show that dropout and repetition rates have not declined significantly during the last ten years. The national dropout and repetition rates also have not declined during at least the last 10 years. The analysis of internal efficiency shows that the Input-Output Ratio of the primary school is substantially low, i.e., about 70 percent. This means that the index of school attrition was not less than 30 percent. The considerably high rate of repetition indicates that students who would be expected to complete schooling within 6 years, are actually requiring on average 8.58 years, or 1.5 times longer than the intended schedule.

Equity And Equality. Kindergarten attendance and rural- urban location appear to be indicators of the socio-economic status (SES) of a student's family, Both variables are related significantly to student learning. Most students from higher SES families attended pre-school programs and enrolled in private-urban schools. This would suggest that the quality of basic education, in terms of the level of quality of entering students, differs substantially due to differences in school location and parental socio-economic status. The percentage of females enrolled in primary schools is significantly and consistently lower than their male counterparts. This indicates that the opportunity for access to primary education still appears to be greater for male more than for female children.

It is generally concluded from the analysis that the services of higher quality basic education in Indonesia have tended to be biased toward students from urban families, wealthy families, male students (especially for school access), and the schools in Java.

Problems of Quality of Basic Education. This study found that basic education in Indonesia confronts profound problems in teacher quality. Teacher quality, as measured in terms of mastery of the subject areas, was observed to be extremely low. The teachers' average score on the Mathematics test was 34.3 out of 58 test items The highest score was in Bahasa Indonesia, while the lowest average score was in Science. The teachers sampled from West Java performed better than did the teachers from the other two provinces. Those from South Sulawesi performed at the lowest level.

The second major problem was the insufficient provision of educational resources, and this varies a great deal among provinces. Schools in West Java generally are better equipped than those are in the other two provinces. There are more schools in West Java equipped with sufficient teacher rooms, libraries, laboratories, and cafeterias. The percentage of schools provided with sufficient numbers of textbooks was practically the same for each of the three provinces. However, there are more schools in West Java which have sufficient textbooks than are those in the other two provinces. The data indicate that the further the province is from Jakarta, the less likely it is to be equipped with adequate school facilities and textbooks.

The third major problem concerned school management quality. This study observes that the management of primary schools is characterized by modest internal control systems as well as external management relations. The internal control mechanisms, examined in this study were Principal activities in evaluating, observing, correcting, and improving the routine activities of a school system. Whereas the "external management relations" were comparative studies with other schools, attending outside meetings, and discussions of school planning with Sub-District Officers. Both managerial activities do not appear to be fully developed as yet in the Indonesian school system, as most schools reported that they have not engaged in these types of activities.

Disparity in Student Achievement

This study generally observed a low level of student academic achievement as seen in terms of percentage of correct answers from the number of items in three subject areas tested. This level of mastery was virtually the same as the one measured in the previous Grade Sixth Survey 13 years ago (Moegiadi, 1976). In comparison with the 1976 study, there seems to be more difficulty faced by students in mastering Mathematics than the other

two subject areas. The difficulty has been increasing lately. In terms of percentage of correct answers, the average scores measured in this study are better in Bahasa Indonesia, better in Science, but much worse in Mathematics than the ones measured in the 1976 study.

The observed disparity of achievement found in this study is first due to provincial differences. In all the three subject areas, Mathematics, Science and Bahasa Indonesia, students in West Java performed better than did students in South Sulawesi and NTB. The difference of achievement between West Java and NTB is one-third of a standard deviation in Mathematics, and one-half a standard deviation in both Science and Bahasa Indonesia.

Considerable differences in achievement also were observed due to the random effect variables, such as rural-urban and family socio-economic status. This has been consistently observed since the achievement study conducted in 1976. This study observed that students in urban areas performed on Mathematics tests one-half of a standard deviation better than did students in rural areas, and the same held true for the other two subjects. The average academic achievement also differs by levels of family socio-economic status. The higher average scores of academic achievement in three subject areas tend to be associated with speaking more Bahasa Indonesia at home, higher parental education, higher family income, and better home lighting.

Finally, differences in average student achievement are also a function of school quality variables. It is assumed that variations in achievement due to differences in provinces and rural-urban location should be associated with differences in school quality by measures of appropriate school provisions. South Sulawesi and NTB have more isolated schools than West Java as they are confronted with more difficult geographical problems in providing educational resources equally to schools. More schools in rural areas are inadequately provided with school facilities, classroom equipment and textbooks, than are schools in urban areas.

School Quality as Determinants of Achievement

Major conclusions of this study concerning the determinants of student achievement are as follows.

(1) It appears that teacher quality and the length of instructional time in each subject are the strongest policy manipulable predictors of student achievement. Teachers' scores on subject content tests turns out to be most positively related to student achievement. This teacher professional capacity variable is the strongest, not only among the teacher quality variables, but also among all school quality variables included in the models. Other teacher quality variables which strongly affected achievement are teacher professional activities and some teaching strategies. Generally, this indicates that the higher achieving students are those who received more instructional time per week; who were taught by teachers who have a better knowledge of subject content and were involved in professional activities, such as reading books and peer discussion; and who were taught through reading, use of teaching materials, discussions, and classroom exercises.

(2) A number of managerial variables were found to be associated significantly with achievement. The data analyses indicated that higher academic performance is associated significantly and positively with a higher degree of external school relations (attending PTA meetings, comparative studies with other school, and interaction with student parents); continuous mechanisms of internal control for the improvement of the instructional process (classroom supervised by headmaster, headmaster correcting lesson plans, etc.); and discussions or interaction with school supervisor.

(3) Teaching process variables have also been shown to be determinations of achievement. Lecturing appears to be the common teaching method used by most teachers. However, it is a positive process variable. This study found that lecturing, a structured

teaching approach, affected student achievement negatively. On the other hand, more dynamic teaching approaches, such as textbook reading, use of materials, classroom demonstrations, discussions and problem solving methods affected achievement positively.

(4) An interesting finding concerns classroom exercises and additional teaching hours for Mathematics; interesting issues in boosting Mathematics achievement. Mathematics testing that consists mostly of arithmetic test items, in fact, appears to require longer instructional time and more classroom exercises in order for students to achieve better test score. The same does not appear to be true, however, for science, for which reading text books appeared to be strongly related to improving test scores. This suggests that differential strategies should be undertaken in boosting achievement in different subject areas, in order to strengthen school capacity to improve student academic achievement in all areas.

(5) Another interesting issue highlighted in this analysis is the negative Beta Weight of the teacher variable "preparation of lesson plans." The analysis revealed that this did not appear to affect student achievement negatively. This may indicate that lesson preparation is not a task that interests teachers, and that perhaps this even had discouraged teachers from enriching their capacity to learn. This variable was shown to affect teacher subject area scores negatively. On the other hand, a variable that instead encouraged teachers to master their subject area knowledge was "teacher reading activities," which might be seen as another form of teaching preparation.

The comparative regression model among the study provinces produced the following conclusions.

(1) While provision of Mathematics textbooks explained differences in Mathematics scores in West Java (Beta=0.176), this variable was not significant in the other two provinces. Textbooks in the Javanese schools did significantly affect achievement, perhaps because problems of textbooks insufficiency tend to exist inevitably when the rate of enrollment exceeds the rate of textbook production.

(2) The profile of management processes was found to be stronger in affecting school achievement outside Java. External management relations and internal control mechanisms affected Mathematics score more powerfully in South Sulawesi and NTB. These mechanisms, therefore, need to be aimed at improving teacher quality through the overall managerial process, especially outside Java.

Comparison between the "rural-poor" and the "urban-wealthy" student groups as regards school quality determinants of student achievement generally shows the following conclusions.

(1) There is no significant difference between the two groups of students as to the relative effect of student characteristics variables as measured by attitudinal, educational, and aspirational characteristics. This suggests that the student quality measures in this study are strong determinants of achievements even though their association to achievement has been controlled for in the regression analysis.

(2) Provision of learning facilities was found to be a strong determinant of student achievement in rural-poor schools. However, it also suggests that boosting achievement through the provision of resources will be a limited strategy. Students in the rural-poor group, through this strategy, would not reach the capacity of their urban-wealthy counterparts in performing academic testing until resources were equally provided. Therefore, providing sufficient resources (teachers, learning aids, textbooks, etc.) appears to be the essential first step towards improving achievement before the development of critical thinking and problem solving skills. Based on the above findings, quality improvement endeavors for poor students in rural schools should be directed first towards providing the optimal level of educational facilities. Whereas boosting achievement for

students in the urban-wealthy areas can start with improvement of the instructional process, characterized by student-centered teaching processes; for example, problem solving methodologies or active learning approaches.

(3) As shown in the previous conclusions, teacher quality variables appear to be the strongest determinants of student achievement, even compared to overall school quality variables. Among the teacher quality variables, teacher mastery of subject content is the strongest. This finding was consistently observed throughout all the models of regression analyses. Teacher mastery of related subject content by itself is affected by professional activities, such as frequently reading books, discussions with peers, and frequent use of dynamic methods of instruction.

Policy Issues to be Addressed

This study found that the average student achievement varies significantly by school location (rural-urban) and socio-economic status of students' families. It was found consistently that students from the urban schools and higher socio-economic status families performed much better academically. At the other end of the scale, schools of students from rural and lower socio-economic status families have been confronted with a lack of teachers, materials, textbooks, and other classroom equipment. Those schools have tried to serve the most disadvantaged students whose academic achievement was the lowest on average. In general, both groups of schools operate at different stages of development; most of the rural schools serve students from the lowest socio-economic status families and could be identified as schools at the initial stage of development.

Important policy issues dealing with primary educational quality improvement are discussed below.

Improvement of Textbook Quality and Distribution

This study has provided further evidence for the importance of textbooks in differentiating the average levels of student achievement as had been identified by previous studies in developing countries (Heyneman & Loxley, 1981; Bruce Fuller, 1985). This study observed that the use of textbooks in instructional processes appears to be important to boost achievement of students in both rural and urban schools.

However, two major problems should be taken into account pertinent to the issues of textbooks; that is, the quality and the distribution of textbooks.

First, concerning the low effect of textbooks on achievement, the World Bank (1989) found that in the Sixth Grade Achievement Survey (Moegiadi, 1976), textbooks were not sufficiently available and utilized, nor they were appropriate in content. Therefore, the provision of textbooks was not significant for boosting achievement. The Policy Analysis Group's Policy Papers (1988) emphasized that contents of the textbooks too "inward looking." The present textbooks generally contain theoretical concepts that do not enable students to deal with real environmental problems while they undertake school learning. From a different point of view, the World Bank Basic Education Study (1989) reported that the low quality of textbooks was due to frequent changes of the school curriculum that led to outdated textbooks. Lack of coordination between the Center for Curriculum and the Center for Textbooks in recruiting and training textbook authors is encountered frequently and appears to be a cause of textbooks quality problems.

Second, the provision of textbooks to schools does not appear to be a simple task. Textbook provision starts with acquisition, editing, reproduction, publication, allocation, storing, maintenance, and distribution of textbooks to schools. This is a long, difficult and complex task. The time required to carry out the whole process is on average four years, beginning with the writing of the first line of the textbooks, up to the moment when the

books are provided to schools (Taya Paembonan, 1988). This means that problems of outdating and unequal distribution inherent throughout the process of textbook provision.

In Indonesia by 1980, there were about 300 million textbooks being distributed to schools. In fact, however, the books were inequitably provided to schools. This study observed that 30.2 percent of the schools in Indonesia were not provided textbooks at all; another 11.2 percent were not sufficiently provided with textbooks. Only 58.3 percent of schools reported that they were provided sufficiently. In rural areas, only 56.8 percent of schools were provided with sufficient textbooks.

The study suggests that the present mechanism of resources provision will lead to the reproduction of millions of textbooks in Jakarta and distribution directly to the hundreds of thousands of schools spread unevenly throughout Indonesia. It is not easy to provide textbooks equally to individual schools throughout Indonesia directly from the central government. Equality of textbook provision could be improved if some of the central government responsibilities were delegated to the provincial and local government levels. By this strategy, textbooks acquired and developed by the central staffs would be reproduced and redistributed by the corresponding local staffs. The role of the central government is to provide intensive supervision and guidance in this process.

In conclusion, equality of textbook provision may be achieved by employing the following dual strategy of textbook distribution: (1) deconcentrating and delegating some of the central government's responsibilities to local staffs for the reproduction and distribution of textbooks to rural schools, and (2) mobilizing private enterprises through the use of market mechanisms for textbook provision, especially for the schools in urban areas. However, for maintaining textbook quality and national unity, the central government still needs to provide sufficient control of the contents of textbooks.

Improving Teacher Quality

Improving the quality of teachers through strengthening teacher training institutions is the long term plan of the government. This has begun from the beginning of Repelita V period. At the same time, the institutional development of teacher training will be aimed at improving the whole planning mechanism for teachers, such as pre-service training, in-service training, recruitment and placement, and career and benefits development for teachers. Of those issues, the building of a mechanism for sustainable on-the-job teacher training appears to be the most challenging and high priority task for the improvement of educational quality.

This study observed that teacher quality appears to be the most strategic path to improving primary educational quality. Teacher quality variables have been observed to consistently affect student academic achievement, especially those related to the way a teacher leads student learning while involving students in analyzing environmental problems and their solutions. The amount of student learning in and out of the school classroom has been found to be determined by the extent to which a teacher has prepared the lesson. Lesson preparation does not mean only whether or not a teacher has made a written preparation (a unit lesson plan), but rather means more broadly how well a teacher has mastered subject content areas and has read books in the area.

Teacher quality appears to be a debatable issue. Quality is measured in this study in terms of teacher professional and motivational characteristics, as well as time devoted to in instructional activities. Teacher professional capacity is measured in terms of mastery of subject content areas and endeavor to continuously update knowledge through reading and discussion with peers. Therefore, improving teacher capacity in mastering subject areas should be among the most urgent policy tasks. Improvement of teacher quality should not be undertaken solely through short in-service teacher training, but rather through mechanisms for developing a school atmosphere conducive to teacher learning and

professional activities, such as subject area reading and peer discussion. This process of teacher professional development should evolve toward a sustainable program of quality improvement.

Improvement of Management and Instructional Quality

School management quality appears to be one of the most important factors affecting student learning. School management quality variables most significantly affecting achievement are school provisions (adequate textbooks and materials), internal control mechanisms (such as checking teacher lesson preparation, observing teaching process, and guiding teacher activities), and external management relations (such as attending PTA meeting, comparative studies with other schools, and discussion with sub-district officer in making school annual plans).

This study observed a number of important instructional quality variables which strongly affected student achievement; variables that accounted for significant amount of student learning. The results of the analyses show that achievement is associated with the frequent use of problem solving approaches of teaching, more time for student reading of books, more use of instructional time per week, less student absenteeism and tardiness, adequate textbooks, and more homework and frequent correction.

An effective instructional process may not be created merely by providing teachers who have mastered subject content areas and teaching methods; teacher capability for facilitating student learning activities is required as well. Mastery of subject content and knowledge of teaching methods are a necessary, but not sufficient, means for a teacher to provide effective instruction. An effective teacher should enable students to become involved in many kinds of learning activities and to absorb new knowledge and procedures from a number of sources, such as continuous reading, writing activities, classroom exercises, and group work. Motivated teachers who can teach with the respect of the education profession will be needed.

In order to manage extended learning activities for students (e.g., problem solving approaches) a flexible school curriculum will be required. A flexible curriculum does not have to be all "open-ended," but helps students and teachers open their minds and feelings to ensure that learning takes place in a broader sense, i.e., learning does not take place only in a school classroom from a single source, but comes from a number of related sources. Learning in this broader sense would lead students to learn from society in which many resources are available for learning activities; teachers, peers, textbooks, other books and reading materials, parents, the natural environment, and so forth. The role of the curriculum is to guide students to select and seek out relevant sources with respect to the stated curricular objectives.

It is important to take a closer look at the emerging conception of the Student Active Learning Approach to teaching currently undertaken in some of the schools. The concept of Student Active Learning is consistent with the education process in Indonesia, since we aim essentially to promote student learning. However, it is not likely that teaching processes can be completely standardized as the instructional process appears naturally to be an art. One important thing to note is that the higher the quality of instruction, the more likely it is to lead to more and better student learning. What would be standardized in the curriculum is the minimal competence a student should acquire from the process of learning and instruction.

Pre-investment in Human Capital

It has been reported in many studies, in both less developed and more developed countries, that the lower achievement of students from poorer families and from rural areas is affected by the low quality of their non- school environments in general and the low quality of their physical surroundings in particular (Simon, 1980). This study observed that

the average achievement of students from poorer families was one-half a standard deviation lower than that of those from wealthier ones. Family SES appears to be a non-malleable variable which is not easily manipulated by educational policy. The suggestion of Selowsky (1976) for the improvement of primary quality in developing countries may be worth considering in the Indonesian case; investment in human capital through pre-school education. Investing in pre-school education may be one of the most important ways to improve the quality of student intake.

The above suggestion is based primarily upon the finding of this study that pre-school student experiences, such as kindergarten attendance and educational aspiration, appear to be one of the strongest determinants of the measured school learning. The study of Moegiadi (1976) also observed that higher quality nutrition of the entering child affects student achievement powerfully. Therefore, it is worth considering the development of pre-school programs, such as kindergarten, play groups, or American-type "Head Start" programs in which children are exposed to early learning experiences, provided with nutritious foods, and motivated to raise their educational aspirations.

In order to develop and assist these programs private educational institutions may have to be mobilized, with the government providing subsidies and acting as facilitator. Through mobilizing private institutions in developing and expanding pre-school education programs, a school-boarding program might be tried in some of the pre-school institutions; especially for those from higher SES families in urban and in rural areas as well.

Quality Improvement Strategy

Indonesia faces the challenge of improving the national education system, including the primary education system. Lockheed (1992) suggests that education systems evolves in stages, i.e.:

(1) *Formalism*; initially, schools function with untrained staff and with narrow subject content. This is followed by a rigid and ordered stage of formalism, characterized by trained, but poorly educated teachers,

(2) *Transition*; following the stage of formalism is a stage of transition in which schools are staffed by better trained teachers with more flexibility, and

(3) *Meaning*; a final stage in which teaching methods foster problem-solving skills and promote creativity while catering to the individual differences of students.

The discrepancy between school practices and those that teach higher-order thinking skills is greatest in schools at the first level; The discrepancy decreases at each subsequent level.

Effective educational quality improvement strategies must build gradually on existing strengths, which differ across segments of society. The diverse Indonesian society is characterized by varying stages of societal development. The great numbers of primary schools in Indonesia are also characterized by varying levels of quality. This requires employing a policy strategy of multi-dimensional stages for school quality improvement, corresponding to each level of societal development within which a primary school operates.

The process of quality development can help poorer schools reach the second stage of development, i.e., the stage of transition. This, in turn, will increase the number of schools ready to reach the meaning stage. This study suggests that macro quality improvement policies may be considered relevant only up to reaching the transition stage. In the meaning stage, schools develop by themselves and evolve to strengthen their own management and supervision of instructional quality. The meaning stage is most effective where schools have sufficient sustainable capacity to help students, teachers, and headmasters learn more, while progressing towards sustainability of quality improvement efforts.

5.0 THE QUALITY AND EFFICIENCY OF VOCATIONAL/TECHNICAL EDUCATION

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5.1 BACKGROUND

In April 1987 Balitbang Dikbud, the Office of Research and Development for Education and Culture, in conjunction wjth The Improving the Efficiency of Educational Systems (IEES) Project conducted a USAID funded Indonesia Education and Human Resources Sector Review. As a follow-up to the Sector Review, and primarily based on the recommendations it contained, Balitbang and IEES developed an implementation plan (5/87) for future IEES activities. This study is one of those activities.

The Sector Review identified four components within the vocational/technical subsector for further study:

- the cost effectiveness of vocational/technical programs,
- the regional relevance of the curriculum,
- partnerships with industry and/or commerce, and
- the placement of graduates.

The core of this study to a large extent focuses on these concerns in the framework of a detailed assessment of the quality and efficiency of vocational/technical education in Indonesia.

In designing the project, the NRT, rather than pursue separate research activities to study these components, chose to focus their efforts, with IEES assistance, on an integrated policy research agenda. A benefit of this approach is that as a result of the study's extensive data requirements Balitbang have established a comprehensive data bank and system of linked data bases that focus primarily on vocational/technical education.

Due to increased demands for information on the vocational/ technical subsector, the continual development of the document library and data bases within Balitbang has become an integral component of the project. Information stored there is from an impressive array of primary and secondary sources and includes vocational/technical education data (statistics, reports and literature) GOI and donor reviews, related loan reports, project evaluations, sector reviews, literature and research on the transition from education to employment, research and evaluation literature, and copies of all project reports to date.

Rationale for the Study

Vocational/technical education requires comparatively large government expenditures (for example, actual costs per graduate in public SMA was Rph. 454,700 compared to public STM at Rph. 809,396: Sector Review, 1986) and yet has been shown to have a significantly lower rate-of-return than general academic secondary education (19% as against 23%: McMahon, Millot and Eng, 1986; 11% against 17%: McMahon and Boediono, 1988). These studies have, however, used highly aggregated data and a clear need remains for a more comprehensive knowledge base of the wider vocational/ technical arena. Particular concern is currently voiced regarding the efficiencies of the system and its components, the quality of vocational/technical schooling and the relationship between the production of skilled graduates and the demands of an increasingly sophisticated labor market.

During the Pelita IV period, enrollment in vocational/ technical education expanded by almost 100% (550,000 to 1,080,000 students: Dikmenjur, 1989). In light of the current GOI thrust in this subsector (as per Repelita V, to increase enrollments by a further 350,000 (32%) without a corresponding increase in funding) it is realistic to determine that GOI will not in the foreseeable future reduce its commitment to vocational/technical education. A crucial policy thrust at this juncture must, therefore, be to improve the quality, effectiveness and efficiency of the existing, constantly expanding system.

A general "intent" of vocational education is that graduates' employment, productivity, and earnings contribute significantly to the economy while fulfilling critical manpower needs in the semiskilled, skilled and mid-level technical sectors. To date there is little substantiative data available that speaks to the school-labor market relationship in Indonesia, except in the form of nationally aggregated figures that are cited in GOI macroeconomic analyses. Little is known of actual graduate activity in the economy in regard to methods of gaining employment, employment tracks (types and length of employment), post-secondary education and training, earnings, and actual on-the-job performance.

Longitudinal analyses, tracer studies, are proving to be a reliable means of obtaining this type of data (see for example, Eight Years of Their Lives, Schiefelbein and Farrell, 1982). It is through such a study in concert with school and employer surveys, that the policy making process in Indonesia can be more adequately informed concerning vocational/technical education's responsiveness to labor market demands.

The Primary Focus of the Study

It is important to note that a prime MOEC intent in providing vocational/technical education is to prepare graduates who are ready to be trained in specific skills. It is not their intent to provide a pre-trained work force (Rakernas, 1987).

By addressing the policy issues detailed later in the brief, it is intended that the study will be able to contribute to, and inform policy debate concerning vocational/technical education. Two areas will be addressed, each closely related to MOEC's mission for the subsector; namely; what factors affect quality education in vocational/technical schools, and to what extent is the subsector externally efficient. The study will then combine these concerns to assess the degree to which quality vocational/ technical education relates to external efficiency.

Contribution of the Study

The research and analysis attributable to this study will contribute to policy debate thus:

- It will speak issues of access, in particular to the degree of equity in access to vocational/technical education.
- It will investigate program and curriculum responsiveness to current and projected manpower needs.
- It will contribute commentary and a series of recommendations regarding the financial and institutional implications of maintaining regionally responsive programs and curricula.
- It will address the incidence and impact of factors that contribute to the quality and efficiency of vocational/ technical education
- It will identify successful programs, as measured by, among other things, graduate placement in work related to training, estimated unit and cycle costs, and the ratio of qualified placed graduates to enrollees.

- It will follow graduates through the transition process from education to employment documenting patterns of post secondary education and training, employment acquisition and subsequent labor market experiences and economic activity.
- It will conduct a cost – effectiveness analysis of the system in general, and of certain programs and school types if possible. And finally; It will investigate education-industry/commerce partnerships and school based production units as potential mechanisms for increased program/school/system quality, effectiveness and efficiency.

In addition, it is intended that the study develop:

- A successful research model that can be adapted/adopted for policy analysis,
- An ongoing data collection, analysis and storage capacity within Balitbang that is capable of providing support to policy research activities on vocational/technical education in Indonesia, and;
- A "school based" tracer study package that will contain standardized materials that can be reproduced to assist schools in following their own graduates.

A comprehensive Policy Issues Discussion Paper that identifies and addresses the major policy concerns in vocational/technical education is to be prepared. The paper will contribute to both this study (Working Paper No. 9) and the Balitbang/IEES/EPP National Seminar.

Conceptual Framework

Conceptually the study is based on a dynamic systems model, and represents a relatively new policy research and analysis approach for Balitbang Dikbud.

The education production process is viewed as consisting of five dimensions; context, input, process, output, and outcome. Within each dimension constructs, or variable groupings, are identified and then quantified in terms of the variables in those groupings. These measurements are converted to indicators, and the relationships between indicators analyzed. The final step is the interpretation of the analysis, and the formulation of an informed commentary and associated recommendations.

Dimensions of the education Process

Context refers to the economic, social, and political environment within which vocational/technical education takes place.

e.g. • Size of school age population
- Projected manpower requirements

Inputs are the various personnel, materials and services (resources) that are used in the education production activity.

e.g. • Enrollments in voc/tech education
- Highest level of education completed by teachers

Process consists of the diverse instructional and institutional activities through which inputs are transformed into educational outputs.

e.g. • Percentage of time devoted to practical exercises
- Extent of teacher-student interaction

Outputs refer to the direct and immediate effects of the educational process (results).

e.g. • Academic achievement

• Skills development

Outcomes are the resultant activities that can be attributed to the inputs, process, and outputs of the educational process.

e.g. • Employment

• Occupational status

It is important at this stage in the presentation of the conceptual basis of the study to clarify the meaning of the collective evaluation terms used. In a purely technical process (which education is not) *efficiency* is defined as existing where *the desired mix of outputs (effectiveness) is maximized for a given level of inputs (costs) or where inputs are maximized for a desired mix of outputs*. Throughout this study the concept of *effectiveness – how well or to what extent the desired outputs are achieved, i.e. to what degree program goals are met* will be regarded as an integral part of *efficiency – effectiveness relative to cost*.

The *internal efficiency* of an education system is how well it achieves its goals, i.e. *the ratio of the value of its outputs to the value of its inputs*. While *external efficiency is the ratio of the value of its outcomes to the value of its inputs*, how well individual productivity is increased as a result of the education process.

And finally, the *quality* of a component, a program, a school or of the system itself is defined as *the amount of inputs per component (resource concentration) in relation to the efficiency with which those inputs are utilized by the program/school/system as it works to achieve its goals*. A "high quality" program/ school/system is regarded as one that has at least adequate resources and that employs methods that have demonstrated their ability to produce positive instructional results.

Constraints/Opportunities

The study design is ambitious and will, most probably, stretch Balitbang Dikbud's resources. The NRT is large and will require administrative and technical guidance throughout the duration of the study. Considerable input and monitoring by senior staff are essential if the study is to be successfully completed. An institutional commitment to the study is essential.

External support will be most valuable, and to some degree essential, during certain field research and data analysis stages of the study.

The study will benefit immensely from a comprehensive cross-agency support structure. Much of the data required to complete the study is collected and stored at other agencies (Dikmenjur, Depdikbud, Depnaker, Bappenas, etc.) and, as these agencies are seen as some of the NRT's prime clients it is appropriate that Balitbang encourage their participation throughout the study.

Of a technical nature, difficulties are anticipated determining or assessing measures of quality in vocational/ technical schools. In lieu of readily applicable comparative indicators that would assist in the determination of school quality, a series of proxy measures will be employed. For example, facilities and equipment, degree of maintenance, extent and type of teacher training, reported teacher time on task, on-the-job training programs and student-to-facility ratios.

As with most research of this type only limited research findings are available for discussion or debate during the study period. While a large body of results will not be available prior to the completion of the various components of the study, the NRT will

undertake to make all information gathered available as soon as possible. To accommodate this intent, a series of Working Papers including Research Reports and Executive Reports will be produced on a regular basis.

The Project's Clients

Products of the study are regarded as being primarily for three groups of clients; GOI (non-MOEC) decision makers (e.g. Bappenas, Depnaker, etc.) MOEC decision-makers, and donors and similarly interested parties. Efforts have been made throughout the design of the study to assure that each of these client groups is adequately served in terms of project products.

To assure that the findings and recommendations of the study reach a crucial audience during the major policy formulating activities on the GOI/MOEC calendar, the timing of the research and the reporting schedule have been directed toward annual critical points, for example, Rakernas and the Minister's policy speech that occur each June and July respectively. Each May an Executive Research Report will be submitted to the Ka Balitbang office.

Policy Objectives of the Vocational/Technical Education and Training Subsector

Within the context of Indonesia and Pancasila, vocational/ technical education should provide access for students to receive the education and related skills training that will enable them to become economically productive in the workforce. It is the intention of GOI that vocational/technical education and skills training support national development in a cost-effective manner.

The broad intent of policy within the subsector is to:

- provide citizens access to vocational/technical education;
- provide education and skills training;
- provide the potential for graduates to find work;
- provide the potential for graduates to be economically productive, utilizing their acquired skills;
- support national development goals through the activities of graduates;
- ensure efficiency within the subsector; and,
- coordinate and collaborate with other government agencies, industry and commerce.

Related Policy Issues:

- To what extent does the vocational/technical education system provide access to citizens in an equitable manner?
- To what extent does the vocational/technical education system provide basic education and practical job skills to its' students?
- To what extent do vocational/technical graduates proceed smoothly into employment?
- To what degree does the vocational/technical education system produce graduates who are economically productive utilizing their acquired skills?
- To what extent does the vocational/technical education system produce graduates whose activities contribute to national development goals?

- To what extent does the vocational/technical education system operate efficiently, optimizing the use of public funds?
- To what extent does the vocational/technical education system coordinate with government agencies and actors in the subsector, and with commerce and industry vocational education and training, and do those relationships result in effective and efficient outcomes?

Current Policy Questions

A content analysis of key policy and policy research documents (Mandolang and the NRT, 1988) revealed that within each of these policy issue areas there were several major policy questions of current concern. These are grouped as follows:

School/Program Quality

Considering that quality is a focus of Repelita V, and that further expansion of the system is planned, to what degree and in what manner will school quality be affected?

What are the cost implications of maintaining quality programs? In an attempt to improve program quality, can costs be standardized?

Curriculum

To what degree should program curricula be specialized?

Should vocational/technical schools offer such a wide range of programs? – A recent count indicated that over 160 are currently offered.

How geographically generalizable or specific do curricula need to be, given the nature of the various programs and local economic and demographic trends?

Graduates and Employment

To what degree should formal schooling produce trained or trainable graduates?

How are SMKTA graduates performing in the labor market relative to SMA graduates? How do vocational/technical graduates perform over time, within the first, second, third .... years after graduation, relative to SMA graduates?

What paths do students follow into employment, further education and skills training, and with what outcomes? What graduate follow-up system can be successfully implemented at the school level?

What job opportunities are projected for the formal, informal, and traditional sectors? What percentage of vocational school graduates can be expected to find work in these sectors?

What guidance does or could the schools provide regarding potential employment?

Are there skills standards for graduates? Do they meet entry level specifications for potential jobs? Do they meet trade standards for professional certification?

Are vocational school graduates placed in jobs they are trained for? If graduates are in jobs related to their training are their skills relevant to their tasks and are they at a level of mastery from which they are able to work productively? If they receive further training, do they command the basic competencies to proceed smoothly into the training? In short, are we producing a quality, skilled workforce?

How do graduates proceed to self employment? Do current programs meet their needs? Could current programs better prepare and encourage students to become self-employed?

Efficiency and Effectiveness

By what criteria can the effectiveness and efficiency of vocational/technical programs be assessed? To what degree do existing vocational/technical programs meet these criteria?

How can the vocational/technical system operate more cost-effectively? To what degree, and in what manner can production units in schools support program effectiveness, efficiency, and graduate entrepreneurship?

What types of partnerships have been successful in improving effectiveness and/or efficiency, and why? Have those partnerships been institutionalized? How can partnerships be supported to improve efficiency and effectiveness?

Matching Development Plans

Do current programs match national or regional development plans and/or local community needs?

What should be the criteria for upgrading, consolidating, or establishing new vocational/technical schools?

School Management

What operating standards should be applied to vocational/ technical schools?

What management information systems (MIS) can be developed to monitor, evaluate and analyze the overall system as an input to managing this complex subsector?

Methodologies

1. The production of National and Provincial Mapping Reports.

   The NRT and PRTs have conducted national and provincial data and document reviews and analyses that resulted in mapping reports that focus on the vocational/technical policy issues outlined above, the supply and demand of labor, and demographic trends. The provincial mapping exercises required a series of more extensive analyses than did the national mapping exercise, as their intention was to compare operations in the provinces to long term policy plans and provincial development plans.

2. The establishment of a National Vocational/Technical Education Data Bank, a National Vocational/Technical Education Data Base, and three Provincial Vocational/Technical Education Data Centers.

   The NRT has continued to develop a document repository and a system of linked data bases within Balitbang (perhaps this can shortly be replicated in Dikmenjur). Similarly the PRTs have developed and maintained regional document centers. Information now stored includes a wide range of current and historic vocational/technical education data from an impressive array of primary and secondary sources.

   To date, two training sessions have been conducted by members of the NRT to introduce current data storage techniques to PRT members. A third training session is scheduled for early 1990.

3. The administration of a series of surveys; a large scale graduate tracer study of some 4,500 SMKTA and SMA graduates, a survey of some 90-110 schools, and a survey of employers. It is also intended that a select subsample of schools that operate either partnership projects or production units will be surveyed.

   The Graduate Tracer Study is intended to document the entire transition process from education to employment. The sample will include schools in the three sample

provinces and will contain SMA schools and selected types of SMKTA schools. The actual composition of the sample will be determined following discussions with senior Dikmenjur staff and the PRTs.

The School Survey will collect data that will address quality and effectiveness issues in vocational/technical schools.

The employer survey will speak to issues concerning graduate placement and activity in the workforce, and perceived relevance of the curriculum.

The partnership survey is designed to identify school-and-industry/commerce partnerships that can serve as a model for other vocational/technical schools interested in forging similar relationships with local employers.

The production unit survey is designed to determine what types of production units are successful in vocational/technical schools, and to document what types of support and additional training (for staff and administrators) would help secure the success of these ventures.

5.2 THE TRANSITION FROM EDUCATION TO EMPLOYMENT: THE QUALITY AND EFFICIENCY OF VOCATIONAL/TECHNICAL EDUCATION STATUS REPORT

During the Pelita IV period, enrollment in senior secondary vocational/technical education expanded by almost 100 percent, from 550,000 to 1,080,000 students (Dikmenjur, 1989). In light of the continual GOI enrollment drive in this subsector Repelita V calls for an increase in enrollments by a further 350,000, i.e.32 percent (without a a corresponding increase in funding) it is realistic to determine that GOI does not in the foreseeable future intend to reduce its commitment to senior vocational/technical education. A crucial policy thrust at this juncture, therefore, must be to improve the quality, effectiveness and efficiency of the existing, expanding subsector.

The general "intent" of vocational/technical education in Indonesia is that graduates' employment, productivity, and earnings contribute significantly to the nation's economy while fulfilling critical manpower needs in the various semiskilled, skilled and mid-level technical subsectors. However, it is difficult to assess the success of past efforts toward meeting this goal as there is a shortage of substantive data available that addresses the school-labor market relationship in Indonesia.

As one considers the many aspects of the transition from education to employment (employment acquisition, types and length of employment, occupational mobility, entrepreneurial activity, post-secondary education and training, earnings, on-the-job performance, etc.) it is evident that comparatively little is known of secondary graduate activity in the economy.

As longitudinal analyses (tracer studies) have proved to be a reliable means of obtaining this type of data, Balitbang Dikbud have adopted such an approach in the EPP QEVT policy research activity. The principal components of which are:

- a critical review of the relevant policy issues in the subsector,
- a longitudinal study of the senior secondary graduates,
- a comprehensive senior secondary school quality survey,
- a school costs and funding study
- a survey of graduate's employers, and
- a special study of the characteristics of graduates that are entering predetermined "technology" related occupations or higher education tracks.

In addition, IEES and EPP are sponsoring a series of workshops to enhance the data analysis and research reporting skills of the Balitbang Dikbud staff associated with the QEVT study.

The Study's Primary Objectives

The QEVT project has two prime objectives:

1. To undertake an empirical study of the transition from senior secondary education to employment, with a clear emphasis on the experiences of vocational} /technical graduates, and through that study to determine the extent to which the subsector is externally efficient.

2. To determine what factors effect quality education in senior secondary schools (emphasis is again placed on the vocational/technical subsector) and to assess the degree to which these factors relate to external Efficiency.

Policy Issues, and the Anticipated Direction of Analysis

Issues:	**Findings and indicators related to the transition from education to employment:**
Labor Market Entry and External Efficiency	• Absorption rates of different categories of graduates, by province, school type and status, program of study, gender, etc. • Identification of institutions of "terminal" education. • Types of employment gained by different categories of graduate. • Earnings by category of graduate. • Degree of preparation of graduates. • Degree of job mobility. • Currently imposed market conditions, wage, job locations, etc. • Characteristics of unemployment. • Degree of job stability. • Labor market entry via post-secondary education or training by category of graduate. • Employment profiles in relation to the work force. • Degree of congruence between aspiration, expectation, and the reality of the labor market. • Effect of school/industry partnerships • Effect of school production units
Equity and Access	• Enrollment profiles, by region, by school type, by school status, by program, by gender. • Enrollments by previous school attended • Enrollment characteristics by educational attainment.
Effectiveness and School Quality	• Quality indicators: (hours of instruction, teacher qualifications, etc.) by different categories of school. • Instructional years per graduate. • Students/graduates per resource unit.
Costs and Funding	• Comparative annual operating costs of different categories of school. • Estimated unit costs. • Component costs • Sources of funding.

The Study Population

The primary unit of analysis is the senior secondary vocational/technical school (the SMKTA). The secondary unit of analysis is the program of study.

The Sample Provinces:

Three provinces constitute the sample sites: Jawa Timur, large and mainly industrial; Sumatra Barat,a province of intermediate size with a mixed economy; and Nusa Tenggara Timur, a province of small islands with an agriculture based economy.

The Composition of the Sample:

Public and private senior secondary vocational/technical schools (STMs SMXKs, SMEAs, and SMT/Pertanians) form 75 percent of the sample, while a quasi-control group of academic senior secondary schools (SM's) make up the remainder. These schools also form the basis of the sample for the School Quality Survey. The longitudinal study sample is comprised of one entire grade III class from each program offered in each of the selected schools.

Over 9,600 students are participating in the longitudinal study and each of the 106 schools that they attended supplied data to complete the school survey.

The Status of the Project:

Activities completed

1. A series of planning and regional training seminars and workshops that resulted in the production of the three provincial mapping reports. These reports are a crucial reference source of QEVT data on the three project provinces.

2. A comprehensive vocational/technical education data bank has been established at Balitbang. Relevant data is continually collected and stored at this facility.

3. The QEVT research brief design was modified to reflect a focus on the policy concerns that were detailed in the QEVT Policy Issues paper that was presented at the 1989 Balitbang/ EPP/IEES conference at Cipanas. (These activities were completed with IEES assistance.)

4. A thorough and protracted series of in-house instrument design sessions resulted in the QEVT team pilot testing longitudinal and school quality study questionnaires in Bogor, West Java during September 1989. Instruments were then modified based on an analysis of pilot study data.

5. A sampling design was drafted in Albany during October 1989, and later modified by the QEVT team to reflect actual enrollments. (This activity was completed with IEES assistance.)

6. During January 1990 planning seminars and field staff training workshops were held in Cipanas and in each of the project's three provinces. QEVT research staff remained at the study sites to supervise the administration of the surveys. Field work was completed in February 1990. Data coding and entry were completed over the following two months.

7. The sample's Ebta and Ebtanas examination results were collected during September 1990 and subsequently entered into the QEVT data base.

8. The first QEVT Seminar was held during January, 1991. Data from the initial analyses were presented to a number of GOI agencies and representatives from the three participating provinces .

9. The Cost and Funding study is currently underway.

10. The first longitudinal study follow-up and associated data entry activities are currently underway.

Other Remaining Activities

1. Employer survey, interviews and data entry. January to March 1992

2. Final follow-up and data entry. June to August 1992.

3. Second QEVT Seminar. August/September 1992.

IEES Research Design and Data Analysis Workshops

IEES research design and data analysis workshops were held in April and August 1990, and January 1991. Topics included longitudinal study design, instrument design, descriptive statistics, intermediate SPSS, and a preliminary analysis of the Student ID and School Survey data bases.

A fourth workshop is scheduled for 1992.

QEVT Documents

Completed working papers

"A Policy Research Brief An Initial Draft"

"A Policy Paper A Guide for Repelita V"

"A Revised Research Brief"

"The Quality and Efficiency of Vocational/Technical Education A Policy Issues Paper"

"A Manual for the Administration of a Longitudinal Survey The 199092 QEVT Study"

Other documents completed

Longitudinal Study and Data Analysis, Workshop Manual I, 4/90

Research Design and Data Analysis, Workshop Manual II, 8/90

Research Design and Data Analysis, Workshop Manual III, 1/91

Results of a Preliminary Analysis of QEVT Data: A Seminar Report, 1/91

Working papers scheduled to be completed

"An Analysis of the Student ID and School Survey Data"

"Case Studies of the Cost and Funding of Vocational/Technical Schools"

"Longitudinal Study Report I (Study Year 1, 1990/91)"

"The Employment of Secondary School Graduates: An Analysis of

Data Supplied by Employers"

"Longitudinal Study Report II (Study Year 2, 1991/92)"

"The QEVT Study A Final Report"

6.0 STRENGTHENING LOCAL EDUCATION CAPACITY

Strengthening Community Support for Education. The research initiative focuses on community support and financing of education. Work on this research builds upon previous research on the localization of school financing (sponsored by IEES 1987-89) and community support information now available from the "Quality of Basic Education Study". This research also will provide additional data for those studies. The objective of the study will be to search for effective ways to encourage community support of local schools. It will undertake to identify ways that local communities can encourage and enhance school quality, equity of access, and student retention. This study will support MOEC concerns with exploring opportunities for schools-based management and community-generated, culturally-specific components of the new curriculum.

6.1 STRENGTHENING LOCAL EDUCATION CAPACITY I

Background

Since the beginning of Repelita I (the first Five-Year Development Plan) in 1969, a large number of changes have taken place in Indonesian education. Throughout the last twenty years, education policy has focused on both increasing access to schools and improving the quality of schooling, though the emphasis until recently was firmly on the former of these objectives. There has been reform in curricula, improvements in preservice and inservice teacher training, a concentrated effort that focused on the construction of school buildings (Inpres), an ongoing increase in the provision of school facilities, and textbook programs included in GOI's drive to support, through education, the goals of national developments. The most recent of these improvements is perhaps the most far reaching: In early 1989 a new National Education Law was drafted.

The new Education Law (Undang-Undang Nomor 1, 1989) provides a basis for simplifying the rather complex system of Indonesian education. The law outlines a centralized education management system for all levels of education within MOEC. However, within that centralized system some administrative and management functions will be delegated to local units of MOEC. The parameters within which ministries and the private sector can participate in the provision of educational services are more clearly defined, and institutional responsibilities defined.

Two critical policy changes are reflected in the new law that, once implemented, will radically change the shape of Indonesian education over the coming decades. These are:

- a Nine-Year Basic Education cycle (NBE) which in principle adds the current three-year Junior Secondary (SMTP) cycle to the six-year Primary (SD) basic education cycle, and
- a local content component to the National Curriculum. Localities now have the authority to determine the content of up to 20% of the curriculum. The "local" component is supposed to reflect imposing local conditions.

A comparison between the existing situation and what facilities and manpower will be required to implement these policies (particularly NBE) brings to light a number of potentially debilitating obstacles that will need to be addressed prior to GOI being able to institutionalize an extended basic education cycle.

The availability of education personnel is a major concern. It is planned that regions will be required to determine the additional number of teachers required, as well as to training and placing them.

Currently, these concerns have been the responsibility of the central government (MOEC). For example, assuming that all SD graduates will be absorbed into SMTP, between 1986/1987 and 1993/1994 Central Java will need an additional 53,164 teachers, an average of 6,645 teachers per year. If the current rate of transfer from SD to SMTP continues, estimates are that the province will need only 12,171 new teachers, or an average of 1,739 teachers per year (estimates include a 2% attrition rate among teachers).

The Strengthening Local Education Capacity (SLEC) study was directed toward identifying methods of enhancing regional capacity to support education, particularly as policies and support structures are adapted and adopted in the light of the requirements of the new education law and the implementation of NBE.

Conclusions and Recommendations

Conclusions

GOI needs additional operational funds to implement NBE, particularly as they are committed to maintaining current quality standards. However, it is not realistic for MOEC to anticipate any substantial increase in the level of financial support from parents or communities as a whole. The capacity of parents to contribute is in most cases extremely limited. Concerning SD's and MI's that are now fee-free it is politically difficult to introduce a requirement that education costs, or part thereof, be borne by the parents. A practice that will be even more difficult in SD Inpres schools, where parents consider everything as free, as part of the Inpres promise for the "Sekolah Presiden" (The President's School – all of which were built with GOI funds under Presidential Decree).

Finding a compulsory NBE will most probably require a similar GOI mechanism adopted to finance the compulsory education (SD) movement. Government will be obliged to erect additional Sekolah Inpres and to free the "new" SMTP student from school fees as it is difficult to demand compulsory education, and then to force people to pay for it in the form of direct fees. Therefore, it appears that government (central and/or local) must increase their allocations to the education budget. From one perspective, such an increase is logical, since the expansion of NBE is the will of government, and not the expressed will of the people. However, the GOI argument for a directed effort to enhance parental and societal participation in education support activities, as the Broad Outlines of State Policies (GBHN) clearly states, the responsibility of education lies in the hands of government, parents, and community.

If the GOIs moving toward the universalization of NBE follows the same pattern as the universalizations of SD, then it is to be expected that familiar problems will arise in its implementation. For example, the schools' difficulties in collecting new fees from parents. Also, if fund raising is to continue through BP3 then the management of school finances and BP3 fees must be made into an accountable action. The spending of BP3 monies through the Yearly School Budget may be a suitable mechanism for this. Headmasters and teachers should be released from administering BP3 fees, and BP3 organizations and their members should be given the opportunity to participate more actively in the schooling process. without some level of participation in the governance process, coupled with some tangible evidence of an increase in the quality of schooling, there can be little incentive for parents to be any more involved than they are at present.

Almost every school reports having difficulties in the administrative procedures that revolve around the use of SPP fees. A mechanism is urgently required that will permit schools to spend the funds they collect at will, though under both guidelines and an umbrella of accountability. The study also revealed that the determination of the amount of

school fee and BP3 is not equitable if the fee levied is considered from a socioeconomic perspective. There is no difference in the amount of SPP and BP3 fee paid by those parents from high or low SES backgrounds, nor is there any differentiation between the fees paid by parents with one or seven children. If the school fees at the SMTP level are required for the NBE program to be successful, then MOEC must institute regulations that will alleviate what may well become impossible fiscal pressures on some families. In addition, it is critical that local government be permitted to raise funds for education. GOI policies should more clearly express the role of each level of local government in relation to the use of education monies from a societal source (e.g., land and house tax (PBB)).

The analysis of the data collected in this study revealed that the level of parental and societal participation in educational support activities are determined by their perceptions of the capability of the headmaster, BP3 leaders, and teachers. Many parents report that they are waiting for a request to provide support to the school, but there is little evidence that they will support an institution that does not hold the promise of functioning at what they regard as a near optimal level, both from a management and curricula perspective.

The study also revealed that the effective implementation of NBE will require some delegation of authority from the central units of MOEC to the school. A system of school-based management and micro-planning should therefore be given serious consideration, as it is becoming increasingly difficult for the central and local MOEC bureaucracies to effectively manage the rapidly growing number of schools. Without such changes central MOEC will be grossly overburdened and as a consequence unable to manage the NBE implementation process. However, it is recognized that a change in this direction will require a large revision of existing regulations and management mechanisms at all levels.

Recommendations

1. Strengthening the local MOEC capacity to implement NBE
   - A deconcentration rather than a decentralization of authority from MOEC central units to MOEC local units.
   - Rather than a centrally based enhancement of fund-raising activities, the authority for provinces, districts, subdistricts, and the schools themselves to determine their fund-raising and community support strategies.
2. Strengthening Local Education Capacity
   - The strengthening of community participation in education should start with a building of the communities confidence in the school management and the quality of the schooling that is taking place. This should be approached through the enhancement of headmasters' competencies. Included are:
     - ability to liaise between schools and parents,
     - school management skills,
     - simple educational planning skills,
     - competencies in utilizing out-of-school resources for planning and school management,
     - competencies to work toward an enhancement of school quality, and
     - competencies in mobilizing parents as resource persons.
   - The strengthening of parental and general community participation should be approached formally and informally through recognized social leaders.

- The management of education finances should be modified to permit schools:
  - wider authority to spend the funds that originate in their community, and to account for their fiscal activity through the School Yearly Budget Plan;
  - to determine, under regulated advisement, the amount of parental contributions (school fees) required; and
  - authority to raise additional funds through school sponsored activities.
- Because of the importance of basic education for nation building, its primary budget should be borne by GOI. The calculation of GOI support should be based on unit costs per school, in terms of per student, per program. The unit costs per student, per program should, within certain guidelines, be uniform.

6.2 STRENGTHENING LOCAL EDUCATION CAPACITY II

Introduction

The interest of Indonesian political leaders in identifying approaches to enhance the role of local leaders in shaping the nature of social services is widely evident. In the education field, this interest has been codified in UU No. 2 (1989).

The current discussions concerning implementing policies focus on such alternatives as decentralization/local autonomy and deconcentration, while remaining somewhat imprecise in defining what is intended by these concepts. These two political/bureaucratic approaches to decentralization can usefully be contrasted to the market approach which places greater reliance on client demand, sometimes referred to as privatization.

Research on the organizations delivering social services, on locally available capacity to manage and finance these social services, and on the relations between the local delivery units both to clients and to higher levels in the political-bureaucratic system can make an important contribution to policy development. This research can help to clarify the types of decentralizing and deconcentrating reforms that best suit Indonesia, and may even point to new directions not currently under consideration.

In this outline, we propose an approach to research on educational decentralization in Indonesia. This approach involves cooperation between USAID through Project IEES and Balitbang, Ministry of Education and Culture, Indonesia. The research is divided into two phases, a policy analysis phase and an action phase.

Defining Decentralization

There have been a number of interesting attempts to conceptualize the major types of decentralization stressing, for example, such options as devolution, deconcentration, and deregulation, but none of these is fully convincing. To simplify the presentation of this design, we will treat all of the current policy options as "decentralizing" options without prejudice to any particular sub-set.

Social services receive political, managerial, financial and other inputs from multiple societal levels, which in the case of Indonesian case of Indonesian education can be referred to as follows: the National (N), the Provincial (P), the Regency or Kabupaten (R), the Kecamatan (K), the School and Local Cluster (S), and the Community (C). Decentralization can be thought of as a macro-organizational reform that shifts the principal locus of these inputs downward; of course, in this reform, there may also be an upward movement of some inputs to counterbalance the overall downward trend.

Factors Influencing Decentralization/Local Autonomy

Research in Indonesia suggests five sets of factors that are known to influence progress to decentralization, including the role of the local level in shaping education. Figure 6.2.1 provides a schematic linking of these five factors to the decentralization outcome.

Figure 6.2.1. Factors Influencing Decentralization

Factors	Levels
Rationale	N
Constitutional/ Legal	P P R R R R R R
Political Linkages	K K K K K K K K K K K
Managerial Resources	S S S S S S S S S S S S S S S
Financial Resources	C C C C C C C C C C C C C C C C C C C

To the extent these factors are favorable, decentralization in some form is likely. Unfortunately, to date there is no persuasive comparative theory that links specific categories of these factors to specific decentralizing options. Still we do learn from theory that it is important when considering the process of decentralization in a particular setting to look at each of these factors:

The Rationale. Common to all decentralizing arguments in contemporary Indonesia is a recognition that a new approach should strengthen national unity. Some proponents believe that an increased role for a local voice is essential in order to strengthen national unity, and others simply argue that a local voice is essential to improve the quality of social services, not to mention the acceleration of national and local development. Finally, some argue that decentralization and even privatization should be advanced in order to increase the efficiency of social services, especially in view of the slowing rate of growth of central government revenues.

Different groups take their distinctive positions with respect to the various rationales. It is important, when considering the prospective direction of decentralization, to appreciate that some regional areas have relatively sophisticated decentralizing rationales, often based on traditional patterns of social organization; an example would be West Sumatra's Minang Kaboh culture, which provides a clear prescription for local government. Where rationales are strongly subscribed to. local areas are more likely to press for decentralization.

The Constitutional/Legal Framework. A variety of laws and presidential degrees have been issued over the past three decades which are favorable to decentralization, but which differ in their emphasis. Some stress a deconcentration of authority within the central technical agencies while others stress a greater role for local government authorities. In some instances and for some sectors (including education), the current constitutional/legal provisions seem contradictory. In many instances they allow for varied interpretations. Thus concerning basic education, both the Ministries of Education/Culture and Home Affairs view current laws as insuring a prominent role for their services. Clearly, additional legal work will be required as decentralization moves forward; in some instances, this will involve developing implementing regulations for existing laws, while in other instances it may require a simplification of current regulations to free local actors from various restrictions.

Political Linkages. A critical factor in the enhancement of local autonomy is the nature of political linkages between the local and central government, as well as within local settings. Local political development may be expressed through local councils which meet to discuss community affairs. Local areas differ in their degree of accessibility to central leaders, which is an important key to gaining central support for local projects. Some local areas are known for the strength of local leadership and for the extensiveness of local loyalty, while other areas are heavily dependent on leadership supplied from outside. It can be argued that a decentralized form of management is likely to be self-serving unless it is made responsible to local citizen groups which have a vested interest in the quality and efficiency of local services.

Managerial Resources. It is often said that one of the greatest limitations on decentralization is the lack of management talent at local levels. By most objective indicators, it is clear that the central level in Indonesia has a greater share of the nation's highly educated class, but that does not necessarily mean that local areas are short of talent. Indeed, long before the central government gained ascendancy, local leaders demonstrated considerable proficiency in managing local affairs. With over four decades of educational development since independence, a significant number of individuals have acquired academic qualifications and many of the this new generation of leaders have committed themselves to careers in local areas. It may be that there is far more talent at the local level than is generally believed. In field work conducted as background for this design, one local leader reported that 80 percent of the school heads in his district were able to exercise broad levels of authority over the management of their schools. With decentralization, it is certain that an extensive program of training will be required to prepare public servants for their new roles. It might be argued, in this training, that it will be as important to teach central bureaucrats to let go of authority as to urge local officials to become more assertive in their work.

Financial Resources. One of the outstanding anomalies of Indonesia is the high concentration of public revenues at the central level. Local governments enjoy little autonomy, in part, because they generate little revenue. It is often assumed that this centralization of revenues derives from special characteristics of the Indonesia resource base that are relatively unchangeable. In fact, a considerable share of central resources derive from taxes collected by local authorities which they are required to transfer to central authorities. For example, half of the fees collected at the local level for car licensing end up in the central treasury. Some local areas give up far more than they get back in transfers from the central government. Despite the regulations leading to a centralized flow of tax revenues, some local governments have found ways to collect substantial revenues; and it may be that there are yet other ways to be discovered. One of the most obvious ways to enhance local revenues is to alter current taxing laws which assign such a major portion to the center. Moreover, due to the limitations of the public sector's ability to meet demand, many private organizations have formed to supplement the public effort, typically drawing on new resources that are inaccessible to the public sector (due, for example, to regulations that restrict the public sector's behavior). In the educational sector, private schools are widely prevalent and these schools may provide useful insights on ways to promote decentralization.

Decentralizing the Educational Sector

Decentralization of education, just as much as the other social services, will be determined by the above five factors; hence the proposed research seeks to gain deeper understanding of these factors.

Currently within the educational sector two different decentralizing alternatives are being debated for basic education: one which involves an enhanced role for local government authorities and a second which involves a deconcentration of authority within

the Ministry of Education and culture. While both of these alternatives have a certain level of constitutional and legal backing and political support, little serious work has been conducted on the implications of these approaches. The two alternatives involve different arrangements of resources between the national and local bureaucracies. The deconcentration option has some resemblance to the current approach of the Ministry of Religious Affairs to those schools under its control, and thus something can be learned of its prospects through looking at Religious Affair's past experience. There is no recent precedent for the second political option.

Neither of these political alternatives is necessarily the most desirable outcome. Recent international research on political approaches to the delivery of educational services indicates that bureaucracies encounter difficulties in delivering education to peripheral areas, as the various regulations they devise to insure equal delivery to standard settings limit their ability to reach out or adjust to exceptional settings. Moreover, bureaucracies have a tendency to multiply functions and become excessively protective of their own interests over against those of their clients. Rewards tend to be structured to favor those who manage services relative to those who receive them.

It can be argued that the political approach to educational policy in Indonesia reached a delivery threshold in the early eighties, and has since begun to encounter some of the same problems experienced by educational systems in other parts of the world: excessive bureaucracy and frequent policy changes in such areas as curriculum and teacher qualifications leading to a widening gap between policy and implementation, a leveling of revenues, a decline in the ability to provide instructional materials.

Distinct from the political alternatives is what is now commonly referred to as the market alternative. Social service delivery is organized much as a private firm is organized: delivery is provided by individual units that have major to exclusive responsibility for the management of their operations, these operations are priced according to actual costs, units are allowed to compete openly for resources (including students, and those units that do well in the competition grow in size and/or improve in quality while those that cannot compete fail. The market principle is clearly evident in the vigorous religious and private sectors of Indonesian education, and these sectors may provide some hints for new approaches to educational decentralization. Comparisons between the public and private sectors may reveal the strengths and weaknesses of each in terms of efficiency, quality, adaptation to local needs and other matters of common concern.

Research Objectives

It is uncertain what the outcome of the current Indonesian policy debate will be, but it is clear that the next several years represents a critical period. During this period, Indonesia will be selecting a new array of national and local leaders and will be debating the direction of its second 25 year plan, in which decentralization and privatization of education are certain to be important themes.

Empirical research can do much to sharpen this debate. While discussions at the national level on the rationale for decentralization and the trend of national politics are beyond the scope of such research, it is possible to focus on other issues, particularly on how the present system works (and does not work), on identifying available and potential resources (particularly those at the local level), and in considering the potential for change. This research should, insofar as possible, seek to enhance understanding of all five of the factors known to shape the direction of decentralization. Thus, in the program of research the objectives are:

1. To identify the legal/constitutional and political forces shaping education and the changes that will be required to facilitate decentralization.

2. To gain a comparative understanding of how schools under different auspices and with differing managerial and financial resources perform, as well as how they relate to their communities and to government agencies.

3. To determine the managerial and financial resources available at the provincial, kabupaten, and local levels to support education, as well as to understand how these resources can be mobilized to respond to decentralizing opportunities.

4. To clarify the current administrative procedures of the several government services involved in basic education (Education and Culture, Home Affairs, Religious Affairs~. What do they do in such areas as curriculum, textbooks and instructional materials, personnel, buildings and facilities, finance? How do they compare in terms of efficiency and effectiveness in providing these services?

5. To examine and document the way the various levels involved in delivering basic education respond to decentralizing reforms, introduced as pilot projects.

7.0 EDUCATIONAL INDICATORS FOR POLICY PURPOSES

Indicators are defined as quantitative characteristics of the education system. Indicators are required in Balitbang Dikbud for general policy purposes, and, potentially, for purposes of resource allocation within the educational system.

Raw data are the numbers on statistical returns such as the annual educational questionnaires; in themselves, they are essentially useless for policy purposes. Conventional statistical data are the totals, averages, and ratios presented in, for example, the Statistik Persekolahan SD 1986/1987. Indicators, however, are derived statistics that are likely to be immediately, or nearly immediately, meaningful or informative for policy purposes.

Indicators, therefore, should permit immediate (or nearly immediate) inferences about the performance of the system from the point of view of objectives of the system. These objectives may be efficiency ones (getting the most from the system given resources used), either internal (achievement of educational objectives) or external (from a broader social perspective, getting the most from the system, e.g. the highest economic return on the resources used in education after graduates enter the labor force); quality ones (improving the educational value added by the education system, i.e., gains in achievement as a result of the educational process); or equity ones (measures of the fairness of the distribution of educational resources, opportunities, and/or outcomes across relevant categories such as province or region or district, income class, urban/rural, ethnic group, etc.).

Indicators may speak to such objectives directly, or indirectly in terms of the inputs to the educational process, the process itself, its outputs (either as conventionally defined or, less probably because they are much more difficult to measure, as conceptually defined), or the eventual societal outcomes of the process (such as changes in economic activity and earnings gains attributable to educational achievement).

The development of an indicator system has to interact with the data collection and management information systems. Modification to these systems should only be made relatively infrequently and after careful consideration, because in a very large system such as the education system in Indonesia, change is slow, costly, and can be disruptive. However, potentially one of the greatest benefits of developing an indicator system is that it can act as a corrective to the dynamics of the data collection system. Indicators do not exist, and are not developed, just for the sake of producing numbers. The whole idea behind indicators is that these numbers are wanted for a specific, policy-relevant purpose. Thus, in working from desired indicators to necessary data, and back from available data to possible indicators, the analyst is continuously encouraged to ask the questions:

- What policy purpose can this indicator serve?
- Why do we collect these data? What policy purpose can they be manipulated to serve?
- How can these data that exist be transformed and presented in a way that makes them relevant as an indicator to a policy issue?
- What quantitative data, either already available or feasible to obtain, can be transformed and presented in a way that would throw light on this policy issue?
- What indicator would throw light on this policy issue? Can it be derived from existing data? From data that could feasibly be collected?

73

- If data are needed that do not exist, is it feasible to collect them? At what cost? How soon could they be available? How accurate do they need to be? Is a census (annual questionnaire to all schools) the best way to collect them, or, considering cost, speed of availability, and accuracy, would a sample survey be better?

By continually asking such questions, and having them the subject of dialogue between those responsible for policy analysis and those responsible for data collection, the information system can be gradually made more useful for policy purposes, and data collection that has outlived its usefulness (if it ever had one) can be eliminated.

Primary Education

Indicators Derivable from Extant Data

The current Statistik Persekolahan SD contains a wealth of data on primary education. The bulk of these data are presented as raw total numbers by Province, generally divided also by Public/Private, and often in addition by status of Public (Inpres or regular). Given the means by which these data are generated (a questionnaire to each school, summarized at Kecamatan, Kabupaten, and Kanwil levels), most of the indicators that will be suggested here could also be calculated by Kanwils for the Kabupaten subunits within them. Thus the indicators appropriate at national level (showing information about distribution across Provinces, and thus permitting inferences about quality, equity, and efficiency at that level) can also be used at the Province level to permit inferences about quality, equity, and efficiency across Kabupaten within each Province, and even in principle for Kecamatan within Kabupaten. However, for the statistical procedures to permit the full benefit to be derived from the data collected on questionnaires to primary schools as that data flows up the system, it may be necessary to make some modifications to the current procedures of reporting the data.

Basically, these involve summarization at each administrative level, with only appropriate totals being reported on up the administrative chain. This greatly speeds processing, and reduces the need for transmission of massive quantities of detailed data to the center and their processing there. However, it also of course suppresses information about the dispersion and distribution of the underlying data within the subunits from the point of view of units more than one step removed from the subunit level in question. Thus the center knows nothing about distribution within provinces, provinces know nothing of distribution within Kabupaten, and Kabupaten know nothing about distribution within Kecamatan. This implies, for example, that it is only possible to make the most crude inferences about rural/urban differentials.

Two possible modifications of current procedures to overcome these problems are as follows. First, Kapubaten could be classified, nation-wide, as either predominantly urban or predominantly rural, the lists provided to Kanwils, and Kanwils instructed to report totals by urban/rural Kapubaten as well as the grand total. Second, some crude indications of distribution might be sent on up the system in addition to the summary totals. A simple indication that could fairly easily be transmitted using manual collation techniques would be extreme values, so that at each level the range at each unit in the preceding level was available. A more informative indication that it might become feasible to have transmitted later would be the percentage (or total number) of units at each level that lay outside some preset range, e.g., the national 10th and 90th percentiles from the previous year (as inferred from the range data, so long as it had gone all the way up for all levels).

Obviously there are other possibilities as well; the important point is that for the center to be able to make useful equity inferences beyond the rather crude provincial level ones, more data on distribution within provinces is needed at the center. However, it is crucial that whatever techniques to obtain this distribution-within-provinces information are adopted, they not greatly slow the processing and transmission of the data, and they not be

open to misinterpretation, miscalculation, or confusion at the subordinate levels of the hierarchy, and therefore should be simple and feasible at low costs given current procedures at those levels.

For policy purposes, raw numbers have limited use. It is generally the relationships between numbers, and the trends in them, that signal the need for more information or action. Of course, the raw numbers eventually must come back in to allow estimation of the magnitudes of implementation problems for any policy decisions that may be considered, but initially the focus for policy indicators is typically derived statistics, not raw totals.

Population by age and sex data by province should be obtained and used to estimate age-specific enrollment ratios by sex and province, i.e., it is entirely possible to have estimates of the percentage of, say, six-year-old boys in each province, or of ten-year-old girls in each province, who are in school. These indicators are urgently needed because population growth rates and, therefore, age structures of the school age population, differ substantially by province and thus crude enrollment data and growth rates of enrollment give no reliable indication of the degree to which movement toward universal primary education is being achieved by province. The underlying point here is very simple. In a given year, the majority of those who die are old, whereas most of those who join the population in a given province are age zero, newborn (not all because there is some migration). The faster the natural rate of increase in a province, the larger the excess of this year's births over last year's – because that is how the growth occurs, through more births than deaths.

In an age pyramid of the population (age on the y-axis, numbers of males each age on x-axis to the left, females on x-axis to the right), the population with the faster growth rate will have a broader base (number age zero) and will taper more rapidly as age increases. Thus the ratio of, say six-year-olds to say twelve-year-olds will be larger in a province with a more rapid population growth rate than in one with a slower population growth rate. One might think these differences would tend to be small, but they are of course cumulative over time, and my very limited knowledge of Indonesian demography suggests that the degree of interprovincial variation in rate of natural increase is sufficient to imply that the age structures of the different provinces vary enough to make age-specific enrollment ratios by province essential to any meaningful comparison of the degree of provincial variation in progress toward universal primary education. The ratios of new entrants to population age seven (or six), and graduates to population age twelve (or eleven), would be particularly useful to have and to watch for trends over time. Given the relatively high national-average dropout and repetition rates currently. Those for 1985/86 to 1986/87 imply that, at unchanged rates, of 1000 pupils entering Tingkat I, only 417 would graduate six years later (more would graduate later after repeating grades), there is likely to be substantial inter-provincial variation in graduates to population-age-twelve ratios.

The existing data on progression through the system, and of repeaters (from which estimates of numbers of dropouts are derived), would permit the construction of several useful indicators. By province, for public and private schools separately, it would be possible to calculate the number of pupil-years of attendance required to produce one graduate at current progression, repetition, and drop-out rates, and to break this down into pupil-years (fractionally greater than one) in each of the six grades (the basic methodology is illustrated at the national average level on pages 2- 183 to 2-195 of the IEES April 1986 Sector Review, Volume 1). This could then be combined with the data on average class size by grade and province to imply, by province, an index of how many graduates are produced for each staffed-class-year of input. This, and the pupil-years of attendance per graduate, would be more useful summary indicators of internal efficiency than any currently published. With current data, this could not be broken down by sex; but if the primary school questionnaire is revised, as it should be, to report repeaters by sex in addition to grade, then it could be. It might also be worthwhile to calculate a variant of this

indicator, taking actual ratios of regular classroom teachers (guru umum) to classes by province, and calculating the implied number of graduates per guru umum by province. It is likely that these three indicators would indicate considerable variation in internal efficiency across provinces.

At this time, there are no other complex derived indicators to suggest. However, much of the data in the current Statistik Persekolahan SD that is presented as raw numbers would, if presented instead as percentages, or even more, as cross-tabulations in percentages, serve as useful indicators. In some cases, for policy purposes, the data would probably also need to be rearranged in different groupings initially for indicator purposes. For example, currently the age of new entrants is reported as raw data by province for 6 years and under, 7 (the modal age in each province), 8, 9, and 10 years. For policy purposes, a more useful presentation would be the percentage distribution of ages of new entrants for each province, with the category "8 years or more" perhaps initially replacing the current final three categories. Other data for which percentage distributions and/or cross-tabulations would be far more revealing than raw totals, include the percentage of each category of teacher who are not civil servants, by public/private and province; the qualifications of teachers (usefully two percentage breakdowns: % with some teacher-training in each province, and then separately % SD only; % JSS; % SSS; % more; and cross-tabulated), again public/private and for each province. Similarly, most other tables; percentage presentations would be more meaningful for initial policy purposes than raw numbers (e.g., conditions of classrooms, classrooms owned; and also percentage breakdowns between public and private for schools, teachers, pupils, classes, new entrants, and graduates; possibly arrayed close to percentage distribution by religion of pupils for each province to flag instances where the explanation of the variation is not connected to religion; and percentages of school in each province, public and private, operating double-sessions).

A further category of indicators that could, and should, be generated by marrying the education statistics with other available information is macro-based expenditure ratios. Available fiscal data on expenditures by the MOEC, Home Affairs, APBD I & II, SBPP and Inpres SD, should be organized by province for primary level education, and from them should be derived various expenditure ratios (expenditure per pupil, per class, per graduate, per teacher, etc.) Note these will be public expenditure ratios only, not unit costs (because data on private expenditures are not readily available as yet); if suggested changes in the primary questionnaire are made, by province estimates of unit and cycle costs might be possible as annual indicators.

With respect to process, this is somewhat inevitable because it is difficult and of dubious value to collect attempts at quantified indicators of the actual educational process on a large scale basis. If the users of data believe that indicators of process are needed and would justify the costs of collection, almost certainly the only approach to collection that is likely to be at all acceptable in terms of cost and accuracy combined would involve visits to small samples of schools to make direct observations, and to administration offices to sample records and interview personnel. Although such data may in the long run yield useful research results (although there is no guarantee of that), it is unlikely that any easily obtainable process data qualify for inclusion in a set of indicators for short to medium-term policy purposes.

With respect to outcomes, the situation is different, in that it is only by measuring outcomes that it is possible to judge how effectively education is serving the purposes for which society supports it. However, where the declared aim is that primary education should be universal, the nature of the outcome information that should be sought differs from that appropriate to levels of education that are explicitly not intended to be universal. Bluntly, if we have already decided that, when resources allow, all persons in the relevant age group shall receive a full primary education, then economic measures of the rate of

return to investment in primary education are, to a large extent, irrelevant, unless it is possible that the policy decision to move to universal primary education might be reversed (which seems politically highly unlikely). This is true to a very large extent even when significant proportions of the relevant age groups do not yet complete the primary cycle of education, unless government is likely to adjust the rate at which it expands capacity in primary schools to the relative rate of return on primary education as opposed to higher levels.

Accordingly, at the primary level what is really needed in the way of outcome data is information that more directly speaks to the qualitative connections between the inputs, process, and curriculum of the schools, and the specific desired outcomes of the primary cycle of education, whether they be productivity, teachability in secondary schools, attitudes and behaviors, or whatever. These are basically long range research questions not necessarily well-suited for in-house policy research by the Ministry or its sub-units itself. Thus at primary level, it is doubtful that it is worth attempting to produce any other indicators of outcomes than those already implicit in attempts to routinely obtain earnings by education data collected by other agencies, in the performance data of primary graduates in the secondary system, in more detailed data on EBTA exam results, and possibly at later stages by sample studies of specific aspects of educational achievement (e.g. in mathematics, language arts, reading) by primary school graduates.

Throughout, the purpose of obtaining such indicators not only at national level but also for provinces, and if possible for lower level units, and also by range data for extreme values, is to obtain information about the range of experience on these indicators within the system. This is not only useful for equity purposes; initially, its primary utility may be in fact in terms of efforts to improve internal efficiency. Obtaining indicators for subunits allows knowledge of current best practice, and of the extent to which other regions lag behind the most efficient areas. It may be unrealistic to hope to bring all provinces up to the efficiency level of the best, because of differences between provinces (and subregions within provinces) in socioeconomic conditions. Nevertheless, data by province could be used to develop target levels of efficiency achievement, or national norms, to which all provinces could be encouraged to aspire. One might use the third quartile, for example.

Secondary Education

Indicators Derivable from Extant Data

In 1988, the secondary school questionnaire was revised from a six-page format, which requested (but did not always successfully collect) extremely detailed information, to a single sheet, two-page format analogous to that of the primary school questionnaire. Procedures, however, are different, in that from Kabupaten level the completed questionnaires are sent direct both to the Kanwil and to Pusat Informatika in Jakarta, so that Balitbang Dikbud has the original survey sheets with individual school data available to it.

An issue that will be important, but which can only be answered by actual experience, not in the abstract, is the degree of decomposition that the secondary school transition rate data will permit, by province or socio-economic location and by type, before the migration/transfer and drop-in problems destroy the validity and usefulness of the results. Only by monitoring the actual data disaggregated to these levels will the degree of inconsistencies and distortions introduced by these factors become apparent. Hence the indicators should be calculated to this degree of disaggregation, even though it should be recognized that they may turn out to be unreliable and unusable for analysis at that degree of disaggregation.

Indicators Obtainable by Revision of Questionnaire

Because promotion rates in secondary schools are much higher than in primary schools (over 95% in almost all cases), the lack of Tingkat- specific age information is probably not

serious. The total lack of age information, however, probably is unfortunate. It could be remedied with a single line on the questionnaire requesting age distribution information, by sex, for the pupil population of the school as a whole. This would permit by province estimates of age-specific enrollment rates for junior secondary and senior secondary (and its components, vocational, technical, etc.) as a whole, and would provide indicators of equity across provinces. If the classification scheme for Kecamatan (or better yet, individual schools) were implemented, then some indication of rural-urban differences might be possible, although the lack of age-specific population estimates for Kecamatan would not permit enrollment ratios to be used for this purpose.

As with primary schools, some attempt should be made to collect fee and contribution information, for both public and private schools. It would be extremely useful information to have, not only because it would give indicators of the share of the cost of education borne by pupils and their families, but also because it would permit better estimates of unit and cycle costs. Given the important role of the private sector at secondary level, some attempt to collect fee information should be very high priority. Only experience will show how easy it is to get reliable fee information from private schools, but there is no reason not to try, and then do some follow-up checks on the quality of the data generated.

Other Possible Indicators

The most useful information would be on outcomes after graduates (and dropouts) leave secondary schools. This implies two kinds of information, available from three types of sources. First, performance in further study. For those graduates who continue in education, information on whether EBTA score, or any other indicator, is any good as a predictor of performance in further education, would be valuable. This may be obtainable retrospectively from the records of institutions at the next level of education, or alternately it could be sought through tracer studies.

Perhaps more useful still would be information on performance in the economy of those who do not continue with further study, whether graduates or not. Such information can come from two types of source, namely sample surveys conducted for other purposes (such as earnings, employment, or expenditure surveys), so long as those conducting the surveys can be persuaded to use educational categories that correspond to those of interest to DPK, and the results of such surveys are routinely made available in usable form to Balitbang Dikbud; and from tracer studies.

The higher education annual statistical questionnaire is undoubtedly the one that most urgently needs careful review and revision, and this should be made a high priority, given the expense of higher education and its relevance to science and technology, which are heavily stressed for Repelita V. Currently, about the only indicators that could be calculated are registered students per teacher and non-teaching personnel, per square meter of space, and per unit of budget allocation (the first by faculty, the others only by university; the first and second for public and private, the last only for public); and graduates per the same. Virtually nothing else is derivable from the data collected, other than the percentage distribution of academic staff, full time and part time, by qualifications.

Indicators Obtainable by Revision of Questionnaire

Universities and other institutions of higher education almost always, for their own internal purposes, keep very detailed records, and this fact should be exploited in the redesign of the questionnaire, without unduly burdening the university and other institutions' administrations. The DG of higher education has an extensive MIS system that already collects very detailed information, particularly on student characteristics and budget issues. I have only been able to peruse some of the description of this system (in Bahasa Indonesia fairly quickly, but my impression is that although it collects a great deal of data, it does not support the calculation of some of the indicators discussed below, which do not

require data that the universities and other institutions ought to find hard to provide. Obviously duplication should be avoided to the extent reasonable, and some liaison should take place with the DG in the process of revising Balitbang Dikbud's higher education questionnaire, but it is probable that for its own, policy analysis purposes, Balitbang Dikbud will continue to need to carry out its own survey. I will list the kinds of data I believe should be obtainable, together with the kinds of indicator that they would support:

- Credit hours (units, "SKS") taken, each semester, average per student by faculty/jurusan/program of study and year (level); average student load.
- Credit hours passed each semester, as above; the two together give a pass rate.
- Units (SKS) taught per academic staff member; average class size by faculty, jurusan, program, year, permitting inference of student-SKS [equivalent of US student-credit-hours] generated on average by each academic staff member by faculty, jurusan, program, year.
- Average Indeks (GPA equivalent) by faculty, jurusan, program, year; cross tabulated with student average load and class size.
- Numbers of students academically terminated or suspended (indeks below 2.5) by faculty, jurusan, program, year, number and percentage.
- Credit hours (units, SKS) attempted and passed at time of award of diploma/degree, by faculty, jurusan, program; combined with average student load per semester, implies a time to graduation [current data on time to graduation is on time to graduation at institution of graduation, so is an underestimate because it omits all time at other institutions for transfers, who are quite numerous].
- Transfer information: as % of all new entrants, credit on transfer, by faculty, jurusan, program.
- Especially for private universities, detailed fee information.

Conclusion

Much data are already available to the Ministry. Currently, they are not routinely transformed into, and presented as, indicators, by province or socio-economic status, that would speak directly to policy issues of efficiency, equity, and quality. For primary and secondary schools, this can be done, relatively easily and quickly, at least for efficiency and equity, with only very minor changes to the current annual questionnaires and data processing procedures.

For quality issues, and for all higher education issues, the situation is different. With respect to quality, it is doubtful whether useful and reliable indicators can be produced without new data collection efforts, which almost certainly should take the form of an institutionalized, regular, annual sample survey of schools involving actual visits (and possibly achievement tests) and both "normal" and "special study" sections. Quality data of any practical use is extraordinarily hard to obtain; however, given the emphasis on quality improvements in education in Repelita V, if this is not to be interpreted purely as input increases, attempts will have to be made. This would seem to strongly support the initiation of the sample survey for primary and secondary schools.

In higher education, the situation is again different. Balitbang Dikbud at the moment does not ask for the right kind of data. Almost certainly, the institutions of higher education (at least the public and larger private ones) have the data and can provide it without much difficulty; what is needed is for Balitbang Dikbud to ask for it. Revision of the higher education annual statistical questionnaire should have high priority.

In primary and secondary education, the most important recommendations on data collection in my view are:

- to request fee and BP3 contribution information.
- to request data on how many teachers are officially part-time and how many hours/week they teach.
- to classify Kecamatan by predominantly urban/rural, and to move toward classifying individual schools by socio-economic status of location.
- for primary schools, to identify repeaters by sex.
- for secondary schools, to ask for minimal information on teacher qualifications.

Similarly, the most important recommendations on indicators are:

- *to calculate indicators separately for provinces, types of school, and (when possible) socio-economic status of location*. This will not only provide equity information, but is the essential prerequisite to investigating the possibilities of efficiency improvements by policy changes to bring the least efficient schools closer to the efficiency of the more efficient ones. The techniques of such investigation are initially Simple and quite crude: decomposition of internal efficiency indicators such as pupil-years/graduate and graduate/class into their component parts; and cross-section analysis, by scatter diagram or cross tabulation, of potential causative correlations between other input indicators and the internal efficiency indicators.
- *to calculate the internal efficiency indicators pupil-years/graduate and graduate/class as suggested above*, recognizing that at secondary level they must initially be treated with caution because of the migration/transfer/drop-in problems.
- *to initiate, and maintain, a continuous dialogue between those responsible for data collection and those responsible for its analysis for policy purposes*, so that each may help the other, and the data collection system over time can evolve into one more suited for policy analysis purposes.

8.0 TEACHER EDUCATION ISSUES

Improving the Quality of Teacher Education. Improving teacher quality is crucial to achieving improvements in the efficiency of schools, since the efficiency concept embraces both cost concerns and educational effectiveness. This improvement is particularly critical at this time, given the pressures which push toward nine years of basic education will exert on the present teacher education capacity at the primary and junior secondary level. This expansion, accompanied by the implementation of a new curriculum, requires the retraining of teachers currently in service, as well as the recruitment, training, and retention of new teachers. While there is strong evidence to support the contention that improvements in the quality of teachers have a disproportionate effect upon school quality, and thus upon student achievement, investments in teacher quality are also very costly. Therefore, it is necessary to explore creative, more efficient strategies for utilizing the variety of existing institutions of higher education rather than massive investments in new ones. An approach which examines non-fiscal incentives for the recruitment and retention of teachers and which also explores institutional pluralism (for the involvement of both existing private and public teacher training facilities) is thus envisioned. Indonesian open university network, as well as its widespread private university system, offer potential means for relieving the already overburdened public sector of some portion of the task of training new teachers. An important aspect of assistance will be policy research, which explores a system of incentives to encourage the private universities to assume a larger share of the teacher training burden and which would encourage the individuals already in service to invest some level of their personal resources in the improvement of their professional capacity.

Primary and secondary teaching in Indonesia, as in many other countries, has shifted over time from an occupation of the elite to a route to upper mobility. A study by Tjiptosasmito and Cummings in 1981 found that the older teachers tended to come from higher socioeconomic backgrounds as measured by paternal education and occupation than did the younger teachers. On average, both prospective primary teachers and secondary teachers had far fewer consumer items in their homes than did high school students who did not aspire to teaching. Further, the rankings on the consumer item scale suggested that the homes of prospective primary teachers were far more modest than those of prospective secondary teachers. The authors concluded that the majority of prospective teachers, particularly male teachers, "are the academically able children of rural homes and modest income urban homes where the parents lacked sufficient funds to support their children for a full University course". The young women willing to teach tended to come from higher socioeconomic homes than did young men, suggesting possible educational discrimination at higher levels, labor market discrimination, or the compatibility of teaching with cultural values or traditional child-raising activities.

The prospective teacher sample substantially agreed with other students that teaching is a valuable service, a challenging occupation, and poorly remunerated relative to other occupations. Prospective teachers, however, had a somewhat more favorable view of how interesting teaching is and the authority commanded by the average teaching .

On average, the study found that prospective teachers were somewhat more modest in assessing their own ability than were those who had no interest in joining the teaching force. This finding has more recently confirmed by forced choice between application for university or LPTK programs. LPTK applications now come from students who tend to be less certain of their academic competitiveness and who, therefore, choose to reduce risk of losing a tertiary seat by applying to teacher training institutions. The net affect of the forced

choice, all else equal, has been to reduce the number of science students entering the LPTKs.

At the primary level, almost half of the currently serving public schoolteachers (49%) and slightly over half (52%) of the private teachers are women. Approximately, 97 percent of public and 94 percent of private teachers' educational attainment is lower than the new Diploma 2 standard. While equivalent data were not provided in 1988/99 for junior secondary teachers, it is estimated that about 60 percent currently hold qualifications of less than D2. This percentage is not insignificant given the supposed subject matter specialization of these teachers.

Recommendations

The purpose of the review was to predict any unintended effects of the proposed implementation strategies, identify unresolved policy issues, and outline the research necessary for on-going policy review.

The recommendations resulting from that review in order of priority area are listed below. The recommendations related to inservice training are presented first because the magnitude of the proposed government upgrading effort demands priority be given to all initiatives related to it.

Inservice Training

1. Conduct a research review (and new exploratory research if necessary) into the learning needs and abilities of primary teachers (in different regions and at different levels – lower grades and upper grades) and principals, keeping in mind the unique set of skills required by those in remote (small schools areas). Use this as the basis for creating options in the D2/SD learning package and to reducing the difficulty and density of the curriculum.
2. Organize a task force to examine the ways in which existing teacher training and support groups (KKG) can be used as the basis for D2 level upgrading and to examine what, how much, and what aspects of the KKG program can be accepted for UT/D2 course credit. The same or a similar task force could formulate a sequence of competencies which should be covered by KKG activities in collaboration with UT.
3. Conduct a formative evaluation of the implementation of the D2/SD program, paying special attention to different forms of learning group organization, rate of student progress, problems and difficulties in following UT courses and ways in which D2 program activities relate to other inservice training programs and teacher time-on-task. This should be organized as soon as possible to allow for the collection of baseline data.
4. Examine the implications of offering the D2 program to SD teachers free of charge, including the negative impact it might have on their commitment to the course and on the morale and motivation for upgrading of the SMP teachers.
5. Conduct an assessment of the learning gains of students in classroom which ALPS (or CBSA) programs are being implemented in order to determine where in the ALPS network and under what circumstances children best learn how to solve problems and use/master progress skills.
6. Involve Balitbang staff and outer island educators (Kanwils, universities) in the formulation and testing of a variation of ALPS systems appropriate for small schools settings; convey the new variations to UT and pre-service training programs so that they can be put into small school training packages.

7. Draw attention to the problems of under-qualification of SMP teachers and the weakness of incentive structures for their advancement to the D2 level. Clarification of the MOEC policy concerning the minimum qualification for teaching at that level.
8. Develop ways of making D2 level upgrading for SMP teachers more attractive, including providing course credits for appropriate PKG involvement, the use of local training centers/ mechanisms for tutorials, the establishment of a D2/UT library at the local study centers (to cut down on the costs of learning materials), the provision of a partial subsidy for D2 level training, and encouragement of student-formed or privately operated study groups.
9. Conduct pilot projects on different approaches to integrating the teacher upgrading (UT/D2) and in-service training (PKG).
10. Continue research already begun at the Open University to determine the effect of UT course participation on various SMP teacher competencies with purpose of identifying in which areas (subject matters, skills) the university is making/can make an important contribution and which areas need to be strengthened or given over to the inservice training systems.
11. Conduct a new evaluation of the effectiveness of the Sanggar PKG program.
12. Organize a task force to explore the similarities and differences in the programs of inservice training for primary and lower secondary school teachers and examine ways in which they might be related to one another as the two levels become more integrated under the 9-year basic education cycle.

Teacher Incentives

1. Develop a unitary strategy for the deployment of all basic education teachers.
2. Track the effects of the new teacher compensation plan over its first four years in order to determine: (l) who benefits, who loses, and why; (2) the effect on instructional time of its incentives for upgrading and multi-jobbing; (3) the equity and appropriateness of using the same credit weighting for teachers at the primary, secondary, and university level; and (4) its effects (if any) on teacher willingness to teach in remote areas.
3. Study the incentive value of adding the structural position of mentor teacher to create greater career opportunities within the basic education field.
4. Clarify the role of the supervisor and consider alternative forms of non-monetary rewards for exceptional service of principals and supervisors.
5. Develop alternative definitions of rurality, construct alternative incentive packages for remote teaching, and test the fiscal implications of each incentive package.
6. Study the quality of private schools (at all levels of the system) relative to that of public institutions in order to provide a firmer basis for accreditation standards than is currently available and to determine to what extent these institutions could become self-sufficient if the present considerable government subsidy were withdrawn.

Preservice Training

1. Study the future roles of the LPTKs. This study should include analyses of:
   - student flows, including drop outs and completion and characteristics of the students including their home areas and their aspirations.
   - cohorts of students as they go through the different programs and are placed after graduation, including the location of their placement,

- the perception of the students concerning the effectiveness of their preparation,
- the use of the branches with special attention to heir uses as recruitment centers, centers of experimentation, observation and practice,
- cost data,
- faculty preparation and productivity with respect to students, classes, research activity, service activity, and direction of student observation and practice, arranged by level of faculty appointment,
- plans for the changing of programs in accord with changing student flows, needs of communities served, and targets for faculty upgrading,
- incentives used to upgrade faculty and to reward outstanding productivity.

This study will provide information as to the comparative effectiveness of the major institutions (public and private) involved in teacher preparation. The purpose of this study is to obtain a data base for use in making policy decisions and obtaining benchmark data. This information base should be used to inform students about their chances for employment as teachers and in other sectors. Career counseling is very weak in LPTKs so these kinds of data are needed to help students make informed decisions about careers.

In addition to the above kinds of data, the LPTKs should carry out studies of their own institutions' purposes, strengths and weaknesses. Planning is weak in LPTKs and this function needs to be improved by continuous self study of resources, external demands and opportunities for LPTKs and the data base collected on students described above. The LPTKs must increasingly compete for resources for their missions in a complex and production-oriented society. It is difficult to defend the allocation of resources to institutions simply to carry on a mission for which there is competition from more efficient deliverers. The enlargement of the basic education system to nine years, and perhaps a later extension by another three years will give the LPTKs only a temporary advantage in competing for resources. After these system expansion stages are complete, the resource competition will become much keener. Therefore, the LPTKs must examine missions in a developing society which are related to a growing economy and an expanding participation in the economy and polity by larger numbers of people who are still marginal.

Part of the examination of the LPTK mission must be a review of their decisions to select so many urban SPGs and SGOs as branches which limits the possibility of their improving practice in rural communities and recruiting rural young people for teacher training. The possible roles of these branches has been described above.

The MOEC needs information on different types of teacher institutions so that it can set expectations for them when they are accredited or reviewed. If the effectiveness of teachers from different kinds of institutions is reviewed carefully, the MOEC will be able to consider a policy change to a wider variety of teacher preparation programs, including those which are more heavily supported by student fees.

2. Support and encourage the agreement between IKIP Jakarta and the Kanwil(s) preparatory to designating certain SD and SMP units as special locations for practice and observation.
3. Support the type of micro classroom-level research conducted by Djalil according to a plan which would involve LPTKs and the MOEC officials of Balitbang Dikbud and Dikdasmen. This research provides information as to how the national curriculum is being implemented by teachers, how teachers are using their training and preparation, and what principals and supervisors must know concerning teacher behavior related to pupil achievement. It is also necessary to provide the information as to whether pupils are being treated as absorbers of content or

whether they are being treated as active participants in the learning process. Such information is valuable for policy making as well as school level decision making.

4. Conduct research on the political system as it operates at the Kanwil, Kabupaten and Kecamatan levels with respect to allocation of funds and assignment of personnel should be carried out. There is a great deal of comment about the dual system of control and plenty of description of how the MOEC operates at those levels with respect to budget formation, allocation of funds and assignment of personnel, but virtually nothing of any systematic nature concerning the interaction of the two ministries at the lower levels of operation. Before extensive modifications of the dual system are made, it would be helpful to obtain some case studies of how the system actually operates, as well as the effects on resources which have been assigned to schools and lower level MOEC units. If abuses exist they need to be systematically detailed. Interviews as part of the case study technique will reveal plenty of detail concerning the workings of this system. It may be necessary to have researchers trained in public administration carry out this kind of study. The case study is recommended because it allows a great amount of detail to be collected which enriches the meaning of the study. The case study also implies that a small number of units will be studied in depth rather than a large survey which would yield a limited amount of data which could be interpreted in many ways by readers.

5. Make the special preparation of principals, supervisors and upper level administrators of the educational system a high priority item on the agenda of system redesign. The rationale has been presented above, and it bears repeating that a much more complex system than the one now in operation cannot depend upon people who are trained only for short periods of time in unrelated skills.

Upgrading and inservice training are always going to be necessary and efficient ways of imparting skills to those who are already well prepared with a base of knowledge of management or instructional systems. The UT will be able to carry out some of these short term training exercises but even these become very complex as the norm of behavior becomes more technical. The private sector will increasingly have to be depended upon to provide inservice training of a highly technical nature.

6. Construct or explicitly adopt a school improvement model compatible with the diversity of Indonesia, use the model as a basis for reviewing the preservice programs, and systematically collect the data necessary to operationalize the model in schools and classrooms.

9.0 CURRICULUM REFORM ISSUES

9.1 CURRICULUM REFORM ISSUES AND TEXTBOOK PRODUCTION

Overview

The Government of Indonesia currently uses a curriculum developed in 1984. Previous revisions occurred in 1975 and in 1968; the former a total revision of the latter. During this two decade process of change, several notable themes have marked the evolution of the national curriculum:

- an increasing emphasis on effective outcomes of schooling, especially those focused on the spirit of independence, national identity, and patriotism;
- greater standardization of the instructional process through the use of centrally-defined hours of instruction per subject, establishment of a course credit system, and the development of a consolidated statement of course objectives;
- greater reliance on prescriptive definitions of appropriate methods in an attempt to offset what is perceived to be low levels of teacher quality and innovativeness;
- increased recognition of the importance of "locally relevant" curricula as part of the overall instructional process;
- a gradual overcrowding of instructional time by the addition of required curriculum in a variety of subject areas;
- increasing disparity between the demand for quality instructional materials and the public sector's ability to produce and disseminate them in a timely, cost-effective way.

Context for Change

State guidelines for development and growth are issued each five years in the form of 5 year plans (Repelitas). In Repelita V which was issued in 1988, the government set out an ambitious agenda for expanding compulsory schooling from six to nine years. The purpose of this report is to assess the implications of this expansion for curricular growth and development, and to identify curriculum-related options for strengthening the performance of students at the primary and lower secondary level of schooling.

Significant growth and development has occurred in the Indonesian education sector in the past twenty years. Primary schooling is universal throughout the country, primary completion rates are relatively high, and millions of textbooks have been produced and teachers trained during this time. Despite these outstanding accomplishments, government officials from all sectors, parents and private sector employees have expressed concern over the quality of educational services, their general availability, and their relevancy to a dynamic economy.

Historical Development

The curriculum currently used in Indonesian primary and lower secondary school evolved over a 25-year period in three phases:

1968-1975: A basic national curriculum was designed and implemented; it was criticized for not providing sufficient detail in terms of content requirements and for providing insufficient guidance to teachers on how to implement the curriculum;

1975-1984: The previous curriculum was completely revised and was highlighted by modifications of instructional time allotted to key subjects and by the introduction of a system of differentiated credits for particular subjects, i.e., a formalized weighing of subjects by curricular importance and instructional time.

1985-present: The 1975 curriculum was revised with increased emphasis on patriotism, the effective domain, and the spirit of independence.

Local content may occupy as much as 20 percent of total instructional time; the remaining 80 percent must focus on government prescribed subject matter as defined in the national curriculum. Although most education practitioners agree on the importance of making the curriculum more responsive to and reflective of the great cultural and economic diversity within Indonesia, there is little agreement on:

- what level of aggregation should be defined as local, e.g., sub-district, district, province or region?
- whether local content should exist as material taught outside of required subjects and distinct from them, or as a content that cuts across all subjects in the form of examples and specific applications?
- who should decide on what to include in the curriculum and how the necessary local materials will be developed and by whom?
- what quality control measures can be introduced to ensure effective transfer of information and efficient use of instructional time?
- what kinds of low-cost instructional materials can be produced and distributed to local populations?
- does the addition of more subject matter to the already overcrowded basic curriculum outweigh the possible opportunity costs of not spending more time on mastery of the basic subjects such as reading and science?

No integration timetable has been established for the introduction of the local content into the curriculum. The questions identified above and perhaps other issues deserve careful review and research before implementation of the program is begun.

Formation of Curriculum

The national curriculum is developed in a top-down process. Each five years a document titled, Ketetapan is published that contains a general elaboration of the Five year national development plan (Repelita). Through this document and per the special requests of the Minister of Education, changes can be initiated in the curriculum. Over the past 15 years the major calls for curricular change have come with the seating of new Ministers. The frequency with which new orientations in curriculum have been mandated, coupled with a lengthy drafting and implementation period, has resulted in a continual state of flux for curriculum planners and teacher educators.

The frequency of change is exacerbated by a complex bureaucratic structure of curricular design, production, implementation, and evaluation.

The Curriculum Development Center (CDC) is one of 5 offices within Balitbang Dikbud. The Testing and Evaluation Center also lie within Balitbang's jurisdiction. The Textbook Center is an autonomous unit within the MOEC and is administratively responsible to the Secretary General of MOEC. Technically, the Center is responsible to the Directorate General of Primary and Secondary Education. The Center has no staff of its own to draft or revise materials. It creates teams of people drawn from institutions such as IKIPs and other universities, the DG of Primary and Secondary Education, the Curriculum and Educational Facilities Development Center and other groups. The curriculum office

within each Directorate is charges with teacher upgrading, special courses, monitoring and supervision of the curriculum, and instruction. Because curriculum is designed in one office, translated into lessons in another, and implemented instill a third, the overall process often lacks integration and it suffers from bureaucratic rules and boundaries that inhibit coordination.

A National Curriculum Committee has responsibility for providing overall guidance in the design and content of curriculum. The Committee consists of representatives from the Directorates of Higher Education, Primary, and Secondary education as well as teachers, headmasters, and supervisors. Subject specialists are retained as consultants to help evaluate curriculum; these individuals are most frequently drawn from universities and IKIPs. At the secondary level, industry leaders and officials also participate.

Once general agreement has been reached on the curricular content, a sub committee of technical specialists defines specific learning objectives for each subject. The group consists of individuals who are curriculum developers, educators, and psychologists. The Curriculum Committee then takes the objectives defined by the technical specialists and in an iterative process, further flesh out subject content that will achieve the specific learning objectives. The Curriculum committee also makes recommendations on appropriate methodologies, and evaluation techniques. The CDC together with the Directorates write out the National Curriculum Guide. The Guide is published and distributed by the Directorates. The result is a prescriptive, but very general statement of content and process. Published as the national Curriculum Guide each teacher in the nation is supposed to receive a copy to guide his or her activities during the school year. Distribution of the guides is the responsibility of the respective Directorates. Limited resources have prevented the Directorates from achieving their distributional targets; the ratios of guides to schools is barely 1:1. Education officials have expressed great concern about the shortage of guides. How can teachers teach the curriculum if it is not available to them? The shortage of curricular guides raises several questions:

1. If, as many education officials maintain, the curriculum guides are essential for teachers to do their job, why are steps not taken to ensure a that 1:1 guide: teacher ratio is obtained?
2. Since most textbooks used by teachers are published by the private sector (about 75%) and since most of these texts do not follow the 1984 curriculum, how important are the guides to the day-to-day instructional process?
3. The guides provide only a very general descriptive range of possible methodologies to be employed for teaching a particular objective; would an investment in teacher guides which are instruction oriented (as opposed to curriculum guides which are objective oriented) be more effective in boosting student performance?
4. Until teachers have technical and pedagogical skills that instill them with a sense of confidence and security, will they be free to improvise and treat the guides as suggestive, not prescriptive tools?

There is a close link among the availability of textbook materials, instructional effectiveness and student performance. Research has shown that the single most important investment resource available to students is a textbook. However, good teachers have the intellectual skills and pedagogical resources to produce their own materials. Teachers in Indonesia are, with rare exceptions, not of sufficiently high caliber to be effective without text materials. The training of teachers to superior competency levels requires enormous financial resources and a long period of time to upgrade all teachers. With over 1.2 million primary level teachers, Indonesia's upgrading task is enormous.

Curriculum Implementation

The Directorate of Primary and Secondary education has responsibility for upgrading teachers in the use of the new curriculum and in preparing them to use "new" learning strategies such as those connected with the active learning approach. The Directorate also is charged with distributing textbooks and material to field sites. Monitoring and evaluating the performance of teachers and the effectiveness of the curriculum in the schools is also their charge.

Communication between the curriculum developers and the implementors is imperative if training and monitoring programs are to be successful. Although formal mechanisms exist for participation on Advisory and Approval Boards for representatives from both offices, it is not clear how effective the participatory element of the development and implementation process is.

The training needs of the Ministry to prepare teachers for full participation in the active learning curricular process is daunting. Current plans call for a two week training course followed by several short programs that will deal with active learning concepts and the CBSA curriculum. Given the weak substantive and pedagogical backgrounds of most teachers, it is doubtful whether even the ambitious training schedule proposed will be sufficient to really bring teachers to a level of self-confidence in their subject matter and in their personal teaching performance that will enable them to implement methods conducive to promoting active learning. A thorough discussion/analysis of material and training needs necessary to support a strong active learning component in schools is needed in the near future.

Summary

The curriculum employed in the primary schools in Indonesia has been taken in a new and important direction in the past few years; the movement towards greater student involvement and a focus on the process of learning as well as the content are significant, positive developments. A number of key problems face Indonesian education officials as the transition is made from 6 to 9 years of education.

1. Increase the number of textbooks available to students to ensure complete coverage;
2. Reduce the curriculum in scope and increase it in depth to ensure that basic skills are fully mastered in the early grades;
3. Integrate the curriculum vertically (grades 1-9) to ensure continuity and sequential progression of skill acquisition;
4. Integrate the curriculum horizontally (across subjects in each grade) so that what is learned in one subject reinforces that learned in another;
5. Develop teacher guides that will compensate in the short run for teacher deficiencies in both substantive and pedagogical areas;
6. Develop student texts that are more active learning oriented, that have numerous examples and skill development exercises that are graduated by level of difficulty;
7. Conduct studies on the potential role of the private sector in increasing the quantity, quality of textbooks and the efficiency of their delivery to students;
8. Develop a system for catering to individual differences among students in terms of ability and interests at the SLTP level;
9. Design a system for strengthening the integration of the various government bodies responsible for development, production distribution and implementation of curriculum;

10. Perhaps most importantly, reach clear consensus on the objective of expanding basic education from 6 to 9 years and on whether the key descriptor is universal or compulsory education through 9 years.

The main reform issues center on three fundamental curricular concepts:

Programs – what constitutes the curriculum, how it is presented, and for what purpose it is being taught.

Production – how many learning materials are produced (for students and teachers), in what subjects, and who produces them.

Process – how the curriculum is implemented, with what degree of quality, and how quality can be improved.

An analysis of these issues follows in the next section and is followed by a set of options related to them in the final part of the report.

Key Policy and Implementation Implications

Planning a Curriculum for Grades One to Nine

There appears to have been little planning for the increase in the number of students that can be anticipated when Junior Secondary schooling becomes compulsory or is offered more freely. There also appears to be little or no planning about integrating the primary and the junior secondary curriculum more tightly. Furthermore, until now Junior Secondary schooling has been preparation for Senior Secondary school. It can be anticipated that a larger proportion of students will leave Junior Secondary in the future without proceeding to Senior Secondary than do so currently. This raises the question of nature of the Junior Secondary curriculum.

Various options should be considered regarding this set of issues:

1. Since some, perhaps the majority of students will go on to Senior Secondary, it will be necessary to continue a preparatory curriculum for them. Should Junior Secondary be tracked with academic, commercial and vocational paths? If there are tracks would it be feasible and desirable to attach the academic track to the Senior Secondary schools, thus leaving the current junior schools to the increased enrollments in commercial and vocational tracks?
2. It should also be possible to include course work which prepares school leavers for life skills such as practical business math, practical sciences and possibly training in such basic vocational skills as measurement, tool use, basic organization and management, use of credit for microbusiness, and fundamentals of modern agricultural practices such as small animal husbandry.
3. Another possibility is to use Junior Secondary school for an interim period as a remediation program to permit those students who are not academically qualified to make up for inadequate primary schooling in the basic subjects.
4. A task force should be set in motion to consider the implications of substantially increased enrollments. At a minimum the following questions should be examined:
    - The integration of cross grade and cross subject reinforcement for grades 1 to 9, whether there is tracking or not. Should the curriculum be conceived of in three phases: a) basic skills in 1 to 3, b) basic knowledge and attitudes in 4 to 6, c) basic life skills and preliminary vocational foundations in 7 to 9?
    - Should class sizes be enlarged?

- Should additional classrooms be added to existing schools? Should new schools be constructed? What guidelines should be used to determine where one or the other should be undertaken?. Should provinces or regions that are now under-served be given priority? Should population pressure be the key determining factor?
- Would double shifting be feasible so that the same school facilities can be used? Would teachers be available and at what cost? If not or if it is too costly, could the schools be used in the afternoons or evenings as collection points for group self-instruction?
- Would it be feasible to use an alternate day schedule as was done in Norway? Would intensive all day weekend programs be feasible, perhaps supplemented by self-instruction?
- Should an Open Schooling program be instituted as an interim step? (education that does not require attendance at school, but can be conducted by methods such as correspondence, radio and TV) Which subjects can be covered adequately by this means? Should it be a distance program, or a Patjar type of program? In the Patjar program students pick up self-instructional modules at a local school, study them for a week, and return to the school to be tested and to pick up another set of modules. They hold discussions with other students and a teacher, Should some residential schooling be provided if it is a distance program?
- If an Open Schooling program is adopted who will prepare the materials and training of its functionaries? What arrangements are necessary for registration, provision of materials, tutorials, testing, etc.?

Crowded Primary Curriculum

The primary curriculum is very crowded. Thirteen subjects are taught each week. Furthermore the 2.5 hour primary school day for first and second grade and the 4.75 hour day for the other pupils is much shorter than in the developed countries and the effective number of school days is fewer. Thus, it is questionable whether the average primary school student has enough time to establish a firm foundation in reading and writing. Whether the low scores in math are the result of the crowded curriculum or an ineffective teaching approach is debatable. These subjects require a great deal of drill and practice to develop strongly habituated skills. Once established they facilitate learning of other subjects. If not well habituated they inhibit other learning.

Lack of Integration within the Curriculum

The curriculum lacks integration among subjects. Although it is reported that the scope and sequence of learning objectives within subjects across grades was tabled and ordered to insure that learning among topics at different grades is reinforced, the scope and sequence across subjects was not ordered. (When the scope and sequence are tabled, all learning objectives are set out in a table. They are placed in an order that optimizes learning. Learning that is prerequisite to other learning is placed earlier. Learning that can strengthen an earlier habit is placed later and is formulated so that it does strengthen the earlier habit.)

The Active Learning Program

The Active Learning Program which is designed, at least in part, to remedy this problem provides the teachers only with sample expositions of materials and methods. Moreover, the active strategy calls for the students to seek out information, but the schools and classrooms are not furnished with reference materials, readings or teaching aids that would enable to get the information they are induced to seek. The program calls upon the

teachers to create and invent techniques and expositions. It is said that most teachers do not know their subject matter well enough to do so.

Government Texts not Synchronous with the 1984 Curriculum

For some subjects parts of the sequence of topics in the 1984 curriculum is out of step with the sequence of topics in the government textbooks. Apparently some of the privately produced textbooks do have the same sequence of topics as the 1984 curriculum guides, but the presentation of some of the materials appears to be flawed. Teachers appear to be attracted to the privately produced material because it enables them to follow the curriculum without needing to make adaptations.

Low Government Textbook Production Levels

It is reported that the government can afford to produce and distribute enough textbooks only for about 20% of the students. Moreover, it appears that a significant proportion of these materials for some reason do not reach the schools for free distribution.

Lack of Continuous Assessment

There is a continuous assessment system in use. Teachers prepare unit tests for formative purposes themselves. Committees of teachers prepare test items for the mid-quarter tests. Teachers are given the responsibility of developing test items on the theory that they know what they have taught and therefore will test only what has been taught. The flaw in this is that teachers may fail to teach required objectives. Some teachers fail to test formatively. Teachers who do test formatively record average scores, but report that they do not have time to remedy mistakes that have been found because of the pressure they feel to reach curriculum targets.

The quality of the test items is likely to be less than good since the writing and validation of precise, unambiguous items is a highly skilled intellectual task that is best done by specialists.

National Assessment Tests

The national tests assess subject matter achievement, not process learning. It is feared that teachers will abandon or suspend use of the Active Learning Strategy in order to teach to the tests. Furthermore, it is reported that teachers who provide private tutoring are mainly teaching to the tests.

Localization of Curriculum

As much as 20% of the curriculum will be regionalized or localized. If this is done principally by adding subjects such as local history, geography, ethnography without reducing time devoted to national subjects, it will further crowd the curriculum and make it more difficult to provide a foundation in literacy and numeracy especially where teachers are weakly prepared or in scarce supply. If it prevents an increase in time devoted to reading and math in the earliest grades it will be a retrogressive step.

Need for Individualization

Individual differences among learners should be catered to in a well designed curriculum. Two basic approaches are possible. 1) Students can be assigned to homogeneous tracks. 2) Schools and classes are kept heterogeneous, but slow and fast learners are given remediation or enrichment in addition to core instruction.

Most education systems use both approaches. At the primary level most use the non-tracked heterogeneous classroom. The best systems provide for remediation and enrichment in the classroom or sometimes in special extra classes designed for either purpose. Very handicapped or exceptionally gifted students are usually tracked in special

93

classes or schools, although in modern practice every attempt is made to include both types of students in mainstream activities as well.

Problem of Teacher Absenteeism

It is reported that teacher absenteeism is high and that teachers often leave the classrooms when they have assigned seatwork or instructed the students to copy from the chalkboard. This further aggravates the problems of too little instructional time and inefficient instructional performance.

9.2 SCIENCE AND MATH CURRICULUM REVIEW

The specific activities were to provide assistance to and work together with an appointed team of the Curriculum and Educational Facilities Development Center (CEFDC), Balitbang, on the following tasks:

- to discuss the master plan of the 1994 curriculum designed by the CEFDC;
- to discuss fundamental issues related to the nine-year basic education and secondary education, including math and science curricula, and suggest several alternative recommendations for the development of their respective 1994 curriculum;
- to give special attention to the assessment and development of math and science curricula for the Primary and Secondary education, in accord with the demands of national development; and
- to formulate strategies of curriculum reform and implementation particular to science and math.

Background, Conditions and Methodology of Work

Indonesia and Education System

The educational system in Indonesia is highly centralized with a well defined hierarchy of educational decision making in which separate directorates are often responsible for closely related activities. A centralized educational system for a large, populous country (fifth in the world) is not unusual in view of the planned development of education within the framework of national development.

Repelita V calls for a reorganization of the current education system to extend basic education to a 9 year cycle from the current 6 year cycle declared in 1984. The nine year basic cycle will be implemented in July 1994.

The term universalization is associated with the extension of education to grade 9 which means that education is available but not compulsory.

This is an important distinction which has major implications for curriculum and the education system in general. The discussion and review of the science and mathematics curriculum for primary and lower secondary was done using universalization as the base.

The 1994 curriculum reform takes a step toward decentralization by placing 20% of the curriculum under local control. At this point, what this means is not clear. The lines of responsibility, content specifications, organization within the province/district/school, time allocations, etc., are open to a variety of interpretations. A set of guidelines (a policy statement) should be produced which defines "local content" and how it will be implemented and assessed.

The proposed science curriculum consistently makes reference to using materials from the everyday life of the child. The mathematics curriculum includes sections on social arithmetic. The intent is to alert the teacher to make concepts relevant to the child. However, according to feedback from teachers to the curriculum development team, some teachers believe this is what "local content" means. This confusion is likely not uncommon. Defining "local content" would be a step to help teachers gain an understanding of what it means for them in terms of instruction.

Generally the content distribution for science is physics and biology in SMP (lower secondary), physics, biology and chemistry in upper secondary (SMA), and general

science in elementary (SD). Earth and space science is incorporated into the physics curriculum.

The 1994 curriculum materials reviewed in science and mathematics were in the second draft stage. The goal is to produce one more draft after feedback from this consultancy and feedback from field visits to provinces outside of Jakarta. The fact that materials were in second draft form resulted in my working with the proposed 1994 curriculum as opposed to looking at the 1984 curriculum as indicated in the terms of reference.

This is an important point, for it is quite different to come into a curriculum reform at the beginning of work to comment and provide feedback as opposed to coming in at a next to final draft stage, when the curriculum team has expended great amounts of time and effort and has limited time available for revision. The specific recommendations and comments for science and mathematics follow in sections three and four, respectively. The comments and recommendations were done with the above in mind.

The current curriculum reform effort in Indonesia can benefit from the knowledge gained from past and current curriculum reform efforts. This does not mean that Indonesia should simply follow suit and adopt, or even adapt, approaches that are currently being advocated such as Project 2061. Problem solving, critical thinking and inquiry skills can be taught with a wide range of content which should be based upon what is most useful to most of the students.

It does mean, however, that as the move to change curriculum to support basic education in SD and SMP continues, what curriculum is should be kept in mind.

A curriculum is a plan for instruction which includes:

- what students need to know;
- how students will learn the material;
- what teachers will do to help students learn the material; and
- the context for teaching and learning.

One of the keys to curriculum reform is the translation of the curriculum into instruction. The most elegant document will make no difference unless the teachers can use it to help students acquire the knowledges, skills and attitudes specified.

Major efforts need to be undertaken to get materials into the hands of teachers and students. The experiments with low-cost teaching materials production and distribution in Ujung Pandang is definitely a step in the right direction.

The teacher training in CBSA also deserves scrutiny. The active learning techniques which stress problem solving, process skills and the active involvement of children in primary education have great promise. Even more critical is the system of professional support that is being developed which involves supervisors, head teachers and teachers.

Activity based curricula have been shown to benefit primary school children and students in low income countries. Inquiry methods, however, can waste time unless teachers carefully prepare and supervise the children's activities. The system in CBSA provides the needed support for the teachers and has the potential of sustaining teacher behavior.

Changes in pre-service education of teachers, particularly at the primary level, are another opportunity to do some small scale experimentation. Training in specific pedagogical techniques for pre-service teachers has yielded positive results in actual use on the job. Micro teaching has shown to produce substantial effects. The combination of lecture, modeling, practice and coaching have shown positive impact on teaching behaviors and student performance gains.

In a country as large and diverse as Indonesia, resources and management present major obstacles. Taking on large scale efforts in production of text materials for teachers and children, in-service training, and teacher preparation is costly and risky. Smaller scale implementation and evaluation is more rational. Unfortunately this means smaller, incremental changes over time which does not appeal to the demands for instant results.

In preparing to implement the 1994 curriculum and laying out the next 25 year plan, the opportunity is present to plan for well designed, small scale projects throughout the provinces which can provide feedback and data to guide improvements in the educational system in Indonesia.

Curriculum 1994/Science

Sekolah Dasar

The Science Curriculum for Sekolah Dasar (SD) follows the format of stating the broad curriculum goal, the instructional goals for each grade level, the concepts and sub-concepts associated with the instructional goals and suggestions for teachers. A suggested time allocation for each concept/sub-concept is also included.

The goal statement language is based on process, problem solving, and relating concepts (content) to the everyday life of the child. Phrases such as: through observing, asking questions, experiments, discussion of experimental results are used consistently. There is also an implied cooperative interaction among students as well as with the teacher. The intent is to foster a dynamic interaction between the child and the environment, among children, with materials and the teacher.

The content range includes life sciences, with a heavy emphasis on health in grade 3, physical sciences and earth sciences. The overall flavor is a "general science" approach with a minor spiral approach. For example, in grade 2 children examine characteristics of rocks and group them based on the characteristics. In grade 5 they examine rocks in more depth, classify them, and are introduced to the vocabulary which attaches names to the classification system. In grade 2 they examine air and wind, weather and seasons. These topics are revisited in greater depth in grade 4. The aim to have both vertical and horizontal development is evident.

There has been a concerted effort to create a basic science curriculum for SD that is experienced based, process oriented, "cooperative" and enriched with charts, pictures, diagrams and models. However, there are some areas that need serious attention as the next draft of the SD curriculum in science is undertaken.

A Scope and Sequence chart should be developed. The scope and sequence chart at a minimum should include grades 1-6. Ideally it would include grades 1-9, so that the SD and SMP curriculum could be looked at as a coherent package.

A long, unproductive debate could ensue about sequencing content. This would be futile. The sequence of content is not the issue. The important questions are: What is worth knowing in relationship to the life of the child? What concepts are relevant to children? What concepts lend themselves to concrete experiences? What concepts provide experiences that are just plain fun and intriguing to children?

Content selection should be judged on the basis of whether it will make sense to the child and place the child in a problem solving situation which leads to the asking of questions, planning and problem solving, etc. The content should help children understand the phenomena of their environment and gain an understanding of their relationship to that environment and their ability to effect changes and improvement in the environment.

The suggestions to the teacher are very important. The teacher is the individual who takes the curriculum and translates it into instruction. With the heavy burden of II subjects

to teach, an overloaded time frame for instruction and an inadequate content background in science, it becomes important to either move the curriculum guides to a more instruction oriented approach or provide teachers with teacher's guides that help them plan instruction

One of the fears expressed about including suggestions for the teacher is that the suggestions become prescriptive and teachers follow them exactly. On the other hand, if the teacher's background in science is poor (and no one seems to doubt this) and text materials are in short supply, it would appear that an investment in instructional support (in this case, more suggestions) is in order.

Process lists vary slightly but usually include skills such as observing, classifying, measuring, communicating, inferring, predicting, experimenting, etc. If one looks at the process of observing, it can, on the surface, appear to be a "simple" one. But it is complex. For example, observing extends across making direct observations of the physical properties of objects and events, using instruments to extend the senses, distinguishing actual observations from personal interpretations, repeating observations to accumulate sufficient evidence upon which to base inferences, etc. A scope and sequence chart could be developed for the process skills. This may prove more productive for the SD curriculum than a content (concept) scope and sequence.

Science is being treated as a separate, discrete content area. There needs to be more relationships built with other content areas in SD. Connections need to be made with mathematics, language, social sciences, etc. The work that is being done in CBSA is an excellent resource for connecting ideas across areas. A variable approach to SD curriculum would be to combine subject areas. This may not be possible for the entire curriculum (all subject areas) but it might be feasible to try some combinations in SD which integrate at least 2 content areas and last for 4-6 weeks. Integrating content for teaching is not an easy task. But by the nature of teaching in SD, one teacher per group of children, integration likely occurs on an informal level, if not at a formal one.

Children can write stories, poems, even plays that other children can read and share. The desire to talk about, describe and communicate is based on experiencing something which promotes interest, excitement, curiosity, and personal discovery and involvement. For young children, science provides this arena. Combining science and language development in the lower levels of SD, also has the advantage of reducing the total number of content areas and preparations for the teacher.

Curriculum development can not occur in a vacuum. The professional staff support systems, curriculum development, resource materials (textbooks, etc.) production, and teacher education (pre-service and in-service) need to be coordinated so that each is supported and strengthened by the other. The opportunity exists to begin to make significant steps toward strengthening the science curriculum in SD and the SD curriculum in general.

Recommendations

1. Develop a Scope and Sequence Chart for Concepts and Sub-concepts.
2. Re-examine content in each grade of SD for relevance to child's life. Attempt to answer question: What is worth knowing for children in relation to everyday life?
3. Consider the context in which teacher operates. Are materials available? Are manipulatives arising from child's environment? Make suggestions that are practical.
4. Examine content in grades 4, 5, 6. Reduce number of topics in these grades. Content is too abstract.
5. Re-think time allocations for concepts.

6. Supply more suggestions for teachers. These could be in the form of lists-do not need to develop full-blown descriptions.
7. Take the curriculum to elementary teachers and find out if they can plan instruction using the curriculum.
8. Involve elementary teachers in developing suggestions.
9. Ownership of SD curriculum needs to be given to "someone."
10. For levels 1, 2, 3 integrate language and science.
11. Initiate the development of a Scope and Sequence for science processes.
12. Re-evaluate "spiral" design and make certain there is not needless repetition.

Curriculum Science/SMP/SMA

Physics

The lower secondary science curriculum (SMP) focuses on biology and physics (physics includes earth and space science). The upper secondary science curriculum includes physics, biology and chemistry.

The physics curriculum for SMP is heavily based on mathematics, quite theoretical and appears more a preparation for advanced study in science than allowing all students to gain a basic understanding of science concepts and an appreciation of science. There is no clear connection between the science in the SD curriculum (primary school) and the SMP curriculum in physics.

Biology and physics are presented as separate subjects. The earth and space sciences are included in physics. They are add-ons and not integrated with the concepts and ideas in physics. There are no connections made between the science disciplines. They are discrete areas taught by different teachers.

Connections can be made to science outside the school context and greater use of community resources. The SMP level should include more career awareness, job opportunities and interests in science and technology, This level is an important decision making point in the child's life and school provides a place for expanding awareness.

Connections should be made to biology so that when sound is taught, it should include how we hear and the anatomy of the ear. Light should include the eye and more than just the lense, nearsighted and far sighted vision.

Topics that should be considered for deletion in SMP are:

- Boyle's Law;
- velocity;
- mathematical calculations and formulas with refraction (light) and electricity;
- selenoids;
- transformers;
- basic electronics;
- water pressure, hydraulics; and
- lenses (formulas and diagrams).

More emphasis in SMP needs to be placed on:

- energy sources and transformations;
- how different forms of energy are used, the changes that occur as we use energy;
- relationships between force and motion;
- systems and interactions;
- measurement, repeating measurements;
- communicating through graphs, tables, charts, diagrams;
- career awareness – science and technology; and
- how products of science and technology change society.

The curriculum in SMA for physics is dense and mathematically based. The use of functions and limits occurs in physics before it is taught in the mathematics curriculum. Streaming occurs in the third year of SMA so that not all students will take the third year of physics.

The biology curriculum for SMP follows a traditional pattern of general biology. It is content oriented with the acquisition of knowledge as the base. In class I, the content covers ecosystems, patterns of life on land and water, structures of organisms (cells, tissues, organs) and plant and animal classifications.

Unlike physics, the biology curriculum for SMP does not contain large amounts of material which are abstract and theoretical. It is information oriented and does not appear to involve manipulations or active investigation. The instructional mode is more didactic and direct. This is not a criticism, but an inference.

This style of instruction can be well done and students have shown achievement (academic) on conventional assessment. Direct, didactic teaching also is a common practice that has been around a long time.

The SMA biology curriculum follows suit and presents a traditional biology curriculum. More emphasis is placed on environment, conservation, population growth and its impact, nutrition and health than in SMP.

In the case of biology and physics, the SMP curriculum does not appear to focus on the level of the SMP child or the child's characteristics. No connections are made between the sciences, and chemistry is conspicuous by its absence.

The curricula do not promote how we know, evidence for why we believe or how we revise our thinking. This is important for developing critical thinking and logical reasoning skills. Important questions for the teacher to ask the students are: How do you know? What is the evidence? What do you infer?

There is no connection between SD and SMP. SMP appears to prepare students for SMA and SMA to prepare students for college. The package of SD and SMP in science needs to be looked at in light of what science content and process skills do we want children to possess at the end of grade 9 (class 3 of SMA). This question refers to all children and not the "elite" college bound.

The present situation consists of the curriculum teams working independently at the SD and SMP levels. The lack of classroom experience of the team members and lack of interaction has resulted in a fragmented curriculum in science at SD and SMP. Long term the 4-9 science curriculum will be the foundation of further education and training on the job or in SMA. The skills and knowledge gained are critical to productivity in an increasingly technological society.

Chemistry

The chemistry curriculum is confined to SMA. Class I deals with matter, atoms, molecules, ions, elements, compounds, symbols, formulas, the periodic table, acids, bases, and simple chemical reactions. Class II takes the student through atomic models, spectral analysis, entropy, equilibrium, concentrations of solutions, acid/base reactions, solubility including calculations, redox reactions and electrochemistry.

Career awareness and technological applications of chemistry need to be included. How does chemistry relate to other areas of science?

The background of the teacher is important in the SMA curricula areas. The teachers will need a strong content background in the subjects they teach. They will also require teaching techniques which allow them to effectively teach students with wide ranges of ability (aptitude).

In the SD and SMP curriculum in science, children should learn about matter and its properties, from where matter comes, the basic units of matter, the interactions of matter, and substance changes. With the exception of a few encounters at the lower levels of SD, and dealing with solids, liquids and gases in physics as forms of matter and its characteristics, chemical ideas are treated only in SMA. The compartmentalization of the subject areas produces a separatism where big ideas can fall through the partitions.

Students who complete SD and SMP only will miss out on major ideas in science such as the structure of matter and the interactions of matter and energy. The SD and SMP curriculum on science needs to be reviewed for concepts from chemistry which are considered essential knowledge for all and which are needed to understand other content areas.

Other Content Areas

The earth and space sciences are in the physics curriculum. Two areas that lack coverage (except for a small amount in SD for weather) are meteorology and oceanography. The topics are quite relevant to the children, and Indonesia is, and has been, greatly affected by oceans. Concepts from oceanography could be placed in the SMP curriculum.

Mathematics Curriculum

Scope and sequence charts have been developed for each grade level in mathematics. The format of the curriculum guide includes concepts, subconcepts, suggestions for the teacher, examples and illustrations in detail.

The implementation plan proposes to provide a basic curriculum for grades 1-11 with enrichment material in grades 7-11 for those students interested and able to do work in greater depth. Surveys have been conducted of IKIP, UNIVERS (Bandung, Bogor) selected teacher to identify those concepts which are considered very essential and concepts which are considered enrichment. The curriculum at grade 12 (level 3 of SMA) has two tracks, one for the social sciences and one for the sciences.

The process of identifying essential ideas and concepts implies that thee is a common core of knowledge in mathematics that all children should possess. This approach has advantages in that it better prepares all the students, giving them equal access to mathematical ideas, allowing them to experience interesting mathematics, keeping doors open, and moving students beyond computation. However, teachers will need a great deal of help in instructional techniques for differentiating content.

The mathematics curriculum is rigorous and academically oriented. It is abstract and theoretical and does not incorporate real world contexts using children's experiences and language to develop ideas.

The mathematical ideas that children learn in SD, particularly the first 3 levels, are very important for they will form the basis of further mathematics. It is critical that children understand mathematical ideas as opposed to gaining many skills.

Giving more time to helping children develop math concepts and relationships does not mean more rote practice. It means having children actively involved in doing mathematics through exploration, constructing, discussing, describing, investigating, etc.

Active learning by children implies that teachers need to create an environment in which children can explore, test, discuss, and apply ideas. Teachers need to listen to children and guide the development of ideas. Mathematical ideas need to be applied to real-world problems.

In the SD curriculum, the above ideas do not appear evident. A traditional content "hierarchy" is presented, well illustrated and with examples. But the examples use abstract ideas and with the exception of the sections on social arithmetic, the context of the examples has little to do with the child's world.

Throughout the curriculum document there are errors in the examples. Some of these are obviously typing errors, but for an inexperienced teacher (or an experienced one) with a poor background in mathematics, the errors will be a major problem. For example, the area of a right triangle is given as multiplying the 2 legs. Line segments are shown with "o" located incorrectly, plus, minus, equals signs are interchanged, etc. Very careful proof reading should be done.

In the SD curriculum, more emphasis should be placed on:

- simulation of quantities;
- mental computation;
- estimation of reasonableness of answers;
- selection of an appropriate computational method;
- process of measuring;
- estimation of measurements;
- word problems with a variety of structures;
- use of everyday problems;
- study of patterns and relationships;
- problem solving strategies;
- discussing, reading, writing, and listening to mathematical ideas;
- connecting mathematics to other subjects and the world outside the classroom;
- exploring relationships – whole numbers, fractions, decimals, integers, rational numbers;
- developing tables, graphs, rules to describe things and events;
- connecting topics in mathematics;
- representing situations in different ways – verbally, numerically, pictorially, symbolically, geometrically; and
- formulating questions.

Less emphasis should be placed on:

- questions which require only yes or no answers;

- paper and pencil computations in isolation;
- memorizing rules, algorithms, procedures without understanding;
- memorizing and manipulating formulas in geometry;
- doing one-step routine problems; and
- manipulating symbols (algebra).

Content topics to be reduced or eliminated from basic curriculum in SD:

- three dimensional geometry;
- two dimensional geometry without relevance to world of child;
- memorizing metric equivalents;
- complex square roots;
- Cartesian coordinates without meaning to child; and
- factors, multiples without real world application.

In the SD curriculum in mathematics, examples and illustrations should begin with manipulations. Presently, examples are abstract, occasionally manipulatives are shown as with place value but after abstraction. This should be revised. Experience with concrete materials should precede abstract ideas.

SMP

The SMP curriculum is intense and theoretical. It begins with set theory, moving into Venn diagrams, and on to solid geometry. The characteristics of three-dimensional shapes are examined and then angles are treated with indepth treatment of angle measurement. This approach continues with treatment of fractions, decimals, and computations interspersed among coordinates, quadratic equations, and trigometric functions.

The SMP curriculum appears as a junior version of an SMA college track. The topics are treated in isolation and no connections are made. There is so much content included that there is little time for exploration, pursuing open-ended problems or project work that might extend over a period of time. Connections are not made within topics in mathematics. There is no model building, for example, creating a model for probability. Equation solving is more manipulating symbols and drill than developing an understanding of variables. expressions, and equations. Usually one method of solving linear equations is presented as opposed to investigating informally inequalities and non-linear equations.

Generalizing solutions and strategies to new problem situations is lacking. Situations for validating the student's own thinking need to be provided. Work with statistics in real-world situations needs to be provided so that students gain an understanding and appreciation of statistics as a tool (a powerful one, at that) in decision making. Probability should lead to compare experimental results with mathematical expectations.

In the SMP curriculum, more emphasis should be placed on:

- reasoning inductively and deductively;
- applying mathematics;
- connecting topics within mathematics;
- extended projects which involve problem solving;
- identifying and using functional relationships;
- using estimation where appropriate to solve problems;

- using estimation to check reasonableness of results;
- developing understandings of topics as opposed to memorizing vocabulary and procedures; and
- building on the base established in SD.

Less emphasis should be placed on:

- developing skills out of context;
- manipulating symbols;
- geometric vocabulary;
- routine, one-step problems;
- converting between measurement systems;
- simplifying radical expressions;
- using factoring to solve equations; and
- logarithmic calculations using tables and interpolation.

Content topics to be reduced or eliminated from the basic SMP curriculum:

- set theory;
- Venn diagrams;
- shapes (equations);
- three dimensional geometry calculating surface area, volume;
- transformation;
- vectors;
- functions – trigometric; and
- graphing equations using point plotting.

Real world problems need to be the focus to motivate and help students apply theory. Until students have progressed through SD and SMP and go to SMA, it is difficult to predict what will happen at the SMA level. If students gain an understanding of mathematics through a basic curriculum in SD and SMP, have a good foundation in understanding concepts of algebra, and relationships in geometry and can deal with data and open problem situations, then the SMA curriculum will be less foreboding.

Coordination with science – physics in particular – needs to be done. The physics curriculum requires functions before the topic is presented in mathematics.

The proposal to provide a "core" curriculum in SMP and SMA for all students and enrichment activities for the more able students, academically and motivationally, is an interesting idea.

Teachers will need help in managing instruction which calls for multi-levels of teaching in the same class. This also calls for good content knowledge on the part of the teacher.

Implementing core and enrichment matter will take very careful planning and providing resources for the teachers. Differentiating instruction in a classroom has been, and is, done by good teachers, it has also been found that teachers get better at differentiating instruction with practice. As more students continue on in the education system, the patterns of diversity in knowledge, skills, and attitudes will increase.

Summary

Individual meetings were held with members from each of the curriculum teams for SD, biology, chemistry, physics, and mathematics. General concerns discussed were:

- size of the curriculum guides;
- format (particularly placement of curriculum objectives);
- suggestions for teachers;
- implementation of curriculum;
- monitoring and assessment of curriculum;
- resource material for teachers and students (including primary teacher education);
- streaming and when it should occur in schools;
- overloaded curriculum;
- purpose of SMP curriculum; and
- local content and its meaning.

Specific concerns for each of the content areas for each curriculum area in science and mathematics (addressed in previous sections) were discussed.

Recommendations

Priority should be given to:

1. Developing a scope and sequence table for the content areas in science for SD and SMP. This should include the science concepts by grade level for classes one through nine that all students are expected to learn.
2. Matching the curriculum guides in science for SD and SMP with the scope and sequence tables and adjusting the curriculum guides where necessary.
3. Adding suggestions for teachers about activities and ways to present the content.
4. Defining what is meant by local content and a policy statement on how it will be implemented.
5. Developing a timeline for the implementation of the curriculum which includes a system for continuous monitoring and assessment.
6. Focusing on the SD and SMP curriculum in science and mathematics and giving less attention to SMA at this time.
7. Designing a plan for implementing a common core of activities for classes one through nine in science and mathematics with enrichment activities for students in SMP.
8. Getting curriculum guides and textbook materials in the hands of teachers.
9. Integrating curriculum development, Cara Belajar Siswa Aktif (CBSA), text development, and primary teacher education (pre-service and in-service).
10. Devising assessment strategies that promote problem solving, critical thinking, welcome curiosity, and reward creativity.
11. Supporting and monitoring multiple, small-scale, curriculum implementation at the local level accompanied by incentives for teacher.
12. Experimenting with incremental changes in the curriculum focused on SD then moving to SMP and finally SMA.

The early years in school are critical in the development of science and mathematics learning and serve as the base for future learning. When one learns a subject well early, the probability to continue learning is increased.

More time in school at the SD level, particularly at the early class levels, more resource material, (particularly text materials for teachers and students), and well-prepared primary teachers are candidates for the major investment of resources over the next five to ten years.

Serious consideration should be given to combining language and science in grades 1-3 (SD). A language experience approach has great potential for promoting literacy in the broadest sense.

Time spent on learning is very important to achievement. The learning, of course, has to be at the appropriate level, neither too hard nor too easy. Primary children should be in school for a longer time period than 3 hours.

Teachers need to understand the content and how children learn. One cannot teach what one does not know.

Resources are necessary as the promotion and supplier of ideas. Individuals in isolation of materials and interaction with others (in this case teachers) soon run out of new ideas and ways of doing things.

The opportunity is present to bring several different forces to bear on the education system in Indonesia. Concentrating on primary education in terms of implementing the curriculum which includes the instructional parameters as well as the content/process parameters and simultaneously planning for the implementation of the SMP curriculum hold promise for improving education in Indonesia.

10.0 EDUCATION, THE ECONOMY, AND DEVELOPMENT

The areas of external and internal efficiency which have been central elements of EPP/IEES assistance in Indonesia require ongoing support. Ongoing assistance has been provided in the development within Balitbang Dikbud of a capacity for policy research and strategic planning analysis. This effort has had highly-leveraged impact and the momentum for further impact remains very strong. More directly, it is this component which will provide the information on the cost consequences of any investment in curriculum reform and improvement in school quality, including the quality of teacher education, which is crucial to the policy decision process. Furthermore, it is policy research in the area of external efficiency that can provide feedback on the effectiveness of these policy adjustments for improving the linkage between school and the labor force.

IEES-assisted cost analysis research is already well advanced and has thus far provided data on actual expenditures by local schools, private expenditures by the parent, and how these differ from budgeted expenditure for each type of school in each of the three EPP pilot provinces. This work is central to the conduct of cost-effectiveness analysis and thus is a means of improving the internal efficiency of the education system.

The external efficiency of the schools is also a very high priority issue in Indonesia. Strategic policy analyses have already been conducted using micro-data on individuals drawn from a stratified random sample with 225,000 respondents through the country. The results have now been replicated for 1982, 1986, and 1987, greatly increasing the confidence in the findings. These data also have now been broken down by province. A next step is the development of policy papers that can serve as the basis for the implementation of policy adjustment relative to improved efficiency at the provincial Kabupatan and even individual classroom level.

While macro-level external efficiency research is targeted as a priority area for the Ministry of Education and to USAID/Jakarta. Therefore, EPP/IEES continues to include this crucial overarching component within the overall design of the EPP/IEES/MOEC collaboration. Funding for this strategic component is provided largely through the EPP budget by the USAID Mission, joined with World Bank funds which are available to Balitbang Dikbud.

The first phase of this cost analysis research in the internal and external efficiency of education in Indonesia was completed in March 1990 by Walter McMahon. Three papers were completed. The first was a strategy paper on "Planning Human Resources Development in Indonesia" which develops the strategy, and the policy research needs and institutional capacities necessary to support the policy research thrust of the IEES/EPP project as it relates to Costs, Internal Efficiency, External Efficiency, and Financing of Education in Indonesia.

The second paper was " A Draft Terms of Reference on Education and the Economy for the 25-Year Plan" which included an outline of research to be undertaken. This paper concluded with some major kinds of evidence arising out of past empirical research in Indonesia that may be relevant to the discussion and refinement of 25-year goals.

The third paper "A Terms of Reference for Cooperative Activities Involving MOEC, the Ministry of Manpower, and BAPPENAS" was discussed at an interministerial "steering committee" meeting.

Long Range Planning – Indonesia Education 2000. The development of the long range educational plan was initiated by Pusat Informatika. Conceptual guidelines were

set with the approval of the Steering Committee of EPP and necessary activities were scheduled. A preliminary draft of a long range plan for the education sector, "Long Range Planning – Indonesia Education 2000," focusing on issues like economic growth projections, manpower requirements, demographic trends, etc. to the year 2018 was prepared. That working document lays the foundation for the preparation of the Indonesian Education 25-Year Plan Background Papers.

An interministerial long range planning group was set up under the leadership of the Director of Pusat Informatika, at the request of the National Strategic Planning Commission (Hancam), charged with preparing the next 25-year plan. To this end, EPP provided assistance to the Pusat Informatika in the development of a Long Planning Group (LRPG) early in Project Year Seven and will serve to lay the groundwork for this activity; setting the dimensions of the work and deciding on the allocation of resources required.

The process of developing the 25-year plan proceeded in two phases. The first phase included the following outcomes:

- formation of the LRPG and its management scheme;
- elaboration of a process for activities and events leading to the plan development;
- preparation of a design for the plan documents; and
- identification of logistical requirements and scheduling

The second phase included the completion of the 25 Year Plan Background Papers and the 25 Year Planning Conference in January 1992.

10.1 EDUCATION, ECONOMICS AND SOCIAL DEVELOPMENT

New Education Goals of Quality, Equity, and Efficiency

The Education Goals for the Second 25 Year Development Plan are new in relation to the first 25 Year Development goals in that they emphasize improved:

- Quality
- Equity, and
- Efficiency.

They build upon the first 25 years by also providing for continuing expansion of

- Access at all levels.

This access needs to be to education of **good quality**, that is **equitable**, and **efficient**. These concepts, include the following :

- **Quality** improvements include improved teacher training; improved teaching in math, all of the sciences, and language; good quality textbooks and teaching materials that are available to all at primary and secondary levels; teacher pay incentives and career paths; improved classrooms; new curricula; and higher achievement outcomes at all education levels. Improvements in inputs to improve educational effectiveness and quality are provided for in the budget scenario.
- **Equity** for all, means greater educational opportunity for children from low income families and rural areas, but without sacrificing quality in the better schools. This is feasible and will implement the National Education Law (Articles 5-7) through aid to underserved schools, textbooks use available to all children from lower income families at no cost, and financing methods discussed below and provided for in the budget scenario.
- **Efficiency** means improvements in internal efficiency within the schools, using efficient rates of expansion of investment that considers benefit/cost criteria, and greater external efficiency in the way students relate to job markets and to the needs for Indonesian social development. Internal efficiency would be improved by lower degree completion times, school financing incentives that promote high attendance and longer days and more student time-on-task; unification of primary school management now divided between MHA and MOEC, more efficient direct payment of teachers by check, payment for private textbook delivery by check; some educational management decision decentralization; and other efficiencies.

These goals of major improvements in quality, equity, and efficiency overlap somewhat in meaning, and mutually exclusive definitions of each are not possible. All of them however, relate to access.

Access, as the term is used here, refers to enrollments at each educational level. In 1991 the current *net enrollment rate* (the percent of children and youth from the relevant age cohort who are enrolled in school) for primary education is 91 percent; for junior secondary schools, 41 percent; and senior secondary schools, 22 percent; and for higher education, 6 percent. (The gross enrollment rate in higher education is much larger because of the over-age enrollments). Efficiency criteria in the form of rates of return at the junior secondary, senior secondary and higher education levels are likely to remain relatively high given the

educated labor needs of the new technologies and the expansion of demand at these levels. These rates of return warrant expansion of access even if quality levels remain the same.

- **These goals at the primary level include reaching a net enrollment rate of 100% by 1998,** and reducing the 38% who currently do not begin 7th grade, which is higher in the rural areas.
- At the junior secondary level, access goals include reaching a **100% net transition rate by 2003,** which involves increasing the current net enrollment rate of 41% to 100% by 2008. **At the senior secondary level** the access goals are for an 80% net enrollment rate by 2003, where it would flatten out.
- **Finally in higher education, the net enrollment rate would rise to 25% in 2018** from the current 5.77% (which does not include the very large over age enrollments). This means about a 7% **gross** enrollment rate currently compared to 30% in Japan (held constant at that level since 1978), 37% in South Korea, 7% in Malaysia, about 15% or more in Taiwan and Hong Kong, and 16% in Thailand. Perhaps Malaysia and Thailand will be near a 25% net enrollment rate by 2018.

Efficiency, equity, and quality at each level of access are concepts that are meaningful. But they do overlap at some points, so further clarification is needed.

Efficiency is a ratio of effectiveness (or quality) **in relation to cost**. Effectiveness, benefits, and quality in contrast are absolute measures. But Effectiveness/Cost and Benefit/Cost measures are **ratios** that measure **efficiency**. Rates of return are one type of a benefit/cost ratio that takes returns to education **over time** into account, and hence they are one important measure of efficiency. Anything that increases effectiveness, such as better school achievement, or better quality, without increasing cost also increases efficiency. Management and implementation in ways that stress efficiency are discussed in a separate section below.

Equity refers to the **distribution** of education and is concerned with equality of educational opportunity. Children from poor and rural areas currently tend to be under represented in school populations at every level. This condition is of considerable concern because the distribution of many of the goods and services of society depends on earnings later which reflect the distribution of education. Consequently, equity considerations have been in the forefront of many national policies in Indonesia as mentioned above and they are one part of the educational financing policies of all of the industrial nations and of the fastest growing Pacific Rim nations. Improved quality (textbooks, teachers, etc) in the poorest schools also improve equity if it reduces the inequality in the **distribution** of these school inputs, and hence in the distribution of school outcomes.

Improvements in equity can result from special Central Government aid to the poorest schools as additional resources become available without reducing the quality in the better-served schools. The specific actions in primary education include: provision of free use of textbooks for all students, especially in the poorest districts, equalization of the number of pupils per teacher by sending new teachers to schools that have high pupil teacher ratios, and other aids to underserved schools (the poorest 10 percent of the schools). The Government has already made the decision to double the salary of primary and junior secondary teachers in the poorest schools and remote regions, a needed change that will also aid access. Recommendations for the junior and senior secondary schools in this long range plan include provision of free use of school textbooks, aid to underserved schools, and eventually an improved objective resource allocation (school aid) formula that provides both for efficiency, quality, and equity. At the Higher Education level proposed improvements involving equity during the next 25 years focus on tuition waivers based on objective need analysis standards for students from low income families who are qualified

for admission to college, strengthening of provincial universities, and revised admission and accreditation standards.

Quality improvements which are emphasized in the 25 Year Plan is a concept for which several definitions may be found. It refers here primarily to student achievement, employability and productivity of graduates, as well as contributions to the graduates' quality of life. Some investments such as good textbooks for all students make more cost effective contributions to learning than do others. Concern for improved educational quality has been expressed in all the seminars and conferences related to the development of the 25 Year Educational Plan. Specific actions to improve quality at the primary and junior secondary level include pay incentives to attract and hold better teachers, and an upgrading of teacher education, particularly in science, mathematics and language. At the senior secondary level in addition to an instructional focus on science, mathematics and language, industrial involvement in partnership arrangements with the schools is a means of improving VOTEC equipment and the quality of the education through access to newer technologies, while at the same time lowering the tax costs. In higher education, three types of investment in quality improvements are provided for: curriculum improvements leading to better employability; better faculty training, pay, and performance incentives; and expansion of user-driven research grants to individual faculty on a project by project basis based on peer review procedures to enable faculty to stay up to date in their fields and to enable Indonesia to train its own PhD's.

Primary Education

- **Access:** An extension of opportunity to study that attains a 100% net enrollment rate in elementary school by 1998 (GBHN 1993 #6). There may be some double counting in the enrollment totals since some students are enrolled in more then one type of school. The steps that follow are necessary to reduce the dropout and repetition rates. The data refer to actual enrollments in 1992, not Repelita V targets.
- **Improved Equity:** Equalization of pupils per teacher, and free use of textbooks, especially in all low income and rural schools by 1998, at the relatively low cost of 74 bil. Rp. Elimination of dropouts in rural and in poor urban areas (GBHN, 1993, #6). The public financing of use of textbooks **makes possible privatization of textbook production and delivery**, with curriculum center approval of content to ensure quality and with private firms assisting in serving the needs. Textbook vouchers could be sent directly to local principals, include delivery of approved books, and require delivery to remote areas to be counter-signed by the principal before the textbook company can be reimbursed.
- **Improved Quality:** Improvements in the pre-service and in service training of primary school teachers, including adequate pay incentives to attract and retain the able, high quality teachers by 2008 (GBHN 1993, #5). Improved administration of the schools which requires that teachers have only one boss. This probably means they must be paid by MOEC rather than Home Affairs as per the public directive (PP6), and directly by check by 1998 to eliminate the diversion of funds and improve administration of the pay rolls. A unified financing system would increase the capacity of the school administration to improve the primary schools. Improved IKIPs and improved science, math, and language teaching.

Junior Secondary Education

- **Access:** 90 percent net enrollment rate by 1998, 100% transition rate by 2003, (Repelita VI), and 100 percent net enrollment rate by 2008.
- **Equity:** Textbooks for all by 1998, during which time private textbook companies could gear up for production and delivery of textbooks approved by the curriculum centers to the local school where they would receive the vouchers for the textbooks

enabling them to claim reimbursement. Free use of textbooks for all primary and junior secondary children from low income families, urban and rural, by 1998 (Repelita VI).

- **Equity:** Aid to underserved schools. This program, supported by the Government and the World Bank, is targeted at the moment to reach only the poorest 10% of the primary schools. It could be extended to the junior secondary level and eventually gradually be folded into a new National school-aid formula (resource allocation model) as the latter is developed. Quality: Teacher pay incentives, to attract, retain, and provide incentives for better training. Teachers paid by check. Better math, physical, social, and life science teachers and language teachers through better in-service training and better IKIPs.
- **Quality:** National Implementation of the new National Curriculum, by 1988 (Repelita VI); improved quality of laboratory and classroom facilities, and other quality and effectiveness improvements discussed above.

Senior Secondary Education

- **Access:** An 80 percent gross school enrollment rate by 2013. Korea and Taiwan both went from 48% to 92% in 17 years.) If there should be more unemployment in this group it would lower the relative wage and increase export competitiveness, leading to faster growth of employer demand.
- **Equity:** A financial resource allocation formula by 2003 that provides a guaranteed minimum expenditure per pupil and also stresses important aspects of efficiency (e.g. attendance, time-on-task). Textbooks for all in grades 10-12 by 2013, including free use of books by all lower income families, mandatory completion of grade 10 by 2013.
- **Quality:** Improved language, mathematics, and science teaching that forms an intellectual attitude that appreciates science and an ability to participate in technological development (GBHN, 1993, #5). Better labs. Better teacher pay incentives for additional training, retention and recruitment, salaries paid by check for accountability; career paths for teachers.
- **Senior Secondary Vocational:** Increased participation by private business and industry through shared instruction, apprenticeships, and internships appropriate to technological change and adaptation. The current 434,000 Rp. public cost per student, including 213,000 Rp. for equipment in STM's can be reduced as this type of vocational training is done more through vocational apprenticeships with private industrial firms using their equipment. The quality of instruction also can be improved through access to the newer, market-oriented technologies used in firms. Job-search time at completion can be reduced because many apprentices will be kept on by firms.

Higher Education

- **Expanded Access:** Raising net enrollment rates from the current level to 25% by 2018. Expansion of the private universities and their systematic accreditation has a significant role in meeting this goal as well and is included in the enrollment totals. Decentralization and increased autonomy for the public institutions; accreditation of the private (and public) colleges (GBHN, 1993, #7). Increased efficiency via large reductions in the number of over-age students, in spite of a growing Masters and PhD enrollment, as the result of gross and net enrollment are shown.
- **Greater Equity:** Tuition waivers only for students from lower income families, based on financial need analysis. Establishment of a new National Financial Need Analysis System by contracts to private firms such as the American College Testing

Program (ACT) or College Board (CEEB) that do this in the U.S. Strengthening of the Provincial Universities. Some two-year community colleges close to students' homes. Reform of admission standards to use honest ranks in the high school class and lesser weight on test scores (e.g., 20%) to improve both the prediction of success in college and in jobs later as well as access by residents of the Provinces who will return to aid economic development there.

- **Improved Quality:** Access to modern science and computer laboratories Greater efficiency (e.g., finishing four year degrees in four years instead of 7, use of research and teaching assistants to facilitate the capacity of faculty to update their skills. Resource recovery through tuition that rises from the current ratio of about 15% costs in the public universities to 30% by 1998, rising gradually to cover 50% of direct costs by 2018. This can be used to provide better salary incentives to attract and retain higher quality faculty, to finance continuing expansion, and to encourage shorter degree programs. Improved education in the physical sciences, life sciences, social sciences, language, engineering, business, and agri-business areas and greater use of user-driven research financed by government and by industry at universities help faculty and students stay up-to-date in all fields (GBHN, 1993, #7). Greater industry participation in the finance of applied research at the universities (User-driver). Faculty incentives would be facilitated by separation of faculty pay scales from the civil service.

Non-formal Education

- Non-school education for illiterates augmented by job training for those with limited skills who are now in the labor force to reduce unemployment and raise their productive ability. (Draft GBHN, 1993, #8).

Educational Management and Implementation of Goals

The specification of goals and targets represents a major step in the process of planning the educational future. Implementing the goals is an equally great challenge. Indonesia has many highly skilled educational administrators within an experienced educational bureaucracy. Nevertheless, the size and complexity of the suggested improvements in access, equity, quality and efficiency will place new and heavy demands on educational management and require that special attention be given to implementation planning.

The translation of goals into programs and projects which determines absorptive capacity involves definition of the responsibilities of each level of the educational bureaucracy. Which decisions should remain centralized, which should become decentralized and with which goals can the private sector best help (e.g., textbooks production, VOTEC internships, accreditation of private colleges, etc.)? Although there can be no easy answer to this question, the central level will need to be involved in the allocation of funds, and the management of large scale, complex operations such as purchase and distributions of equipment. Central authorities also may be expected to play a major role in defining the general direction for educational change, monitoring resource flows, ensuring adequate inputs, and as necessary, mobilizing national commitment.

However, the ability of central policy makers to affect directly what happens inside the schools can be greatly enhanced by effective local school and university management. Reliance on centralized management specifying quantities and program delivery may overestimate the capability of the central Government to control implementation efficiently and underestimate the need for local adaptation. For effective implementation, local level involvement may be needed in the more detailed proposing and planning for new programs and in the mobilization of teacher and parent participation . If decentralization in Indonesian Education proceeds as planned it may be assumed that increasingly the Kabupaten, Kecamatan, the individual school, and the University Rectors and Vice Rectors will accept more responsibility for management of resources to adapt to local needs. Successful

management and implementation of the proposed reforms in Indonesia at a minimum call for additional responsibility and resources to be transferred to the school level, development of improved upward communication, and attempts at creation of participatory decision making processes involving, as appropriate, teachers, community members, and parents. The considerable uncertainty surrounding major educational changes and reforms requires administrative flexibility and local administrators must not only he well trained but also assume responsibility while feeling able to take risks and make mistakes.

The center can assist the local level by providing opportunities for management training and providing technical assistance in the development of simple monitoring and evaluation procedures. Principals and school district administrators for example, are not yet well prepared for strong management roles and specific task-oriented, external technical expertise will be needed. The long range goal is to increase the autonomy and independent responsibility of the individual school and create an administrative and management structure in which all levels contribute creatively to the evolvement of an increasingly effective educational system.

Financing the Attainment of 25 Year Education Goals

Attainment of all these goals also will require adequate resources. Without realistic estimates of the cost of attaining each and realistic means of financing, the goals are relatively meaningless.

The Central Government's commitment is shown as rising from the current 3.0% of GNP in 1991 (2.15% if Home Affairs expenditures for primary teachers are not included) to level out at 5% of GNP in 2013 and 2018. This induces an enormous amount of private saving and investment in human capital formulation largely in the form of earnings and consumption forgone by parents as they allow their children to invest their time in further schooling rather than work at home or in agricultural production. Parents instead spend their own resources for the child's food, clothing, housing and transportation estimated at 19% of GNP in 1998 plus .5% of GNP for fees. This is a total far larger than the investment by all levels of government of 4.52% of GNP in that year. Parents are willing to, and do, make enormous sacrifices for their children and their children's future.

For this important reason, and the desire to attain universal basic education and not merely drive the poor children out of the schools, additional school fees are not proposed at primary or junior secondary levels. The parental contributions however to direct costs are an important available means of financing higher education where the objective is not to attain universal education and the ability to pay does exist. Tuition as a source of resource recovery is proposed to rise to .3% of GNP in 1998, and steadily to cover 50-60% of direct costs at public universities, or to .7% of GNP in 2018 coupled with need-based grants from students from low income families.

The increase in public investment by the Central Government to 3.5% of GNP by 1998 seems reasonable, and conservative, in light of this. It is also below the 4.3% currently being invested on the average by central governments in East Asia, or the 6% in industrial countries. The gradual increase to 5% of GNP by 2018 induces further increases in private saving and investment by parents, as described above. If net enrollment rates in secondary education are capped at 80% in 2013, the private saving and investment by parents, students, and firms in education would be likely not to continue to rise as a percent of GNP but to move toward about 17.8% of GNP in 2018. But the public investment by the central government of 5% of GNP by 2018 would still be well below the current 6% average for all industrial countries.

Reform of the Provincial and Local tax system is needed over the next 25 years to increase community participation in finance and decision making, perhaps considering the independent school districts used in industrial countries and in an increasing number of

developing countries. This would permit local Kabupaten to participate in the financing of the schools based on local votes to adjust the amount spent on education. Increased school fees charged to parents who send their children to school are not a viable means of financing schools at the primary and junior secondary level because it drives the poor children out of schools. Financial need analysis used to waive tuition for students in college based on need is not feasible with millions of semi literate parents at the K-12 levels. Also, the huge economic burdens borne by these K-12 parents already are often overlooked.

Privatization will also assist in other ways. Private universities will be strengthened through accreditation, with parents bearing most of the costs of their continuing expansion. Students can also assist in financing higher education through expanded work-study programs, student loans, and half-time research and teaching assistantship service. Private business firms have particularly important new roles in the production and delivery of textbooks and in assisting with vocational training in the secondary schools through part-time internships. Firms also can assist through much closer relationships with the Colleges of Engineering, Agri-Business, Business Administration, and college and secondary school placement officers.

Feasibility of 25 Year Education Goals

The attainment of the 25 Year Education Goals will take a major financing effort through this public/private partnership. It will also take continuing effort to improve the educational management, efficiency, and absorptive (i.e., implementation) capacity of the education system as discussed above. But with this effort as a percent of GNP, which is modest by East Asian standards, and conservative in relation to where these other ratios are likely to be in the future, the resources available during Repelita VI and over the next 25 years are more than adequate to meet the nation's education goals. The improved access. equity, quality, and efficiency goals for the last year of Repelita VI (1998) will require 13.3 trillion Rupiah (in 1991 prices). With the Central Government and community participation contributing 4.8% of GNP, and using 5% growth in real GNP, this will fully cover the direct costs. In future years, the growth in GNP and the modest increases in the effort as a percent of GNP that is proposed will generate 54.1 trillion Rupiah by 2018, considerably more than the 34.7 trillion required to meet the education goals. If real GNP should grow more slowly at 4% per year the total amount available still is more than adequate, but only after 2003. So by this comparison, the nation's 25 year Education Goals are feasible, and attainable.

Conclusion

Improving the Ability and Quality of Life of the Indonesian People through education is the declared primary Indonesian National objective for the Second 25 Year Development Plan and the most pressing national need. This summary Chapter and the appendix to this Chapter, make the *means of its achievement through education specific* in terms of 25 Year Education Goals. In relation to the first 25 Year Development Plan, the goals provide for continuing extension of access, but are new in stressing improvements in the quality of education at all levels, equity for all, and improvements in the efficiency of the system. Attainment of such goals is needed for achieving *faster per capita economic growth*, greater pupil equity in education for the *reduction of poverty*, and for achieving Indonesian cultural and social development. These 25 Year Education goals represents an *efficient* investment strategy that is also consistent with equity assuming all three of the interdependent policy thrusts are pursued simultaneously. Education is an investment, because increased access, equity and quality all require expenditures and all yield returns in the future. Education yields higher real rates of return on the average in fact than further increases in investment in physical capital. It is a development strategy (growth with equity) that has been successfully pursued by the Pacific Rim nations.

The globalization of the Indonesian economy faces the Indonesian educational system with great challenges. But it also offers enormous opportunities. The importance of human resource development is such that Indonesia's future depends vitally upon it. This will require a major effort, and a much larger investment in education than at present. But the prize of much *higher standards of living, greater equality, better health* (as the result of better education), and *rapid social and cultural development* are well worth the effort, and also within reach.

Specific Attainable 25 Year Education And Quality Of Human Life Goals

In summary are:

- Universal Junior Secondary Education by 2008, (100% Transition Rates by 2003),
- Universal Senior Secondary Education by 2013,
- Greater Equality of Educational Opportunity for All by 2008,
- Indonesian Self Sufficiency in Training Most of Its Own PhDs by 2013,
- Improved Efficiency Throughout the System, and
- Greatly Improved Quality of Instruction at all levels in all of the physical, life, and social sciences, math, language, and applied areas.

Given a renewed commitment to quality, efficiency, and equity in education, and a sufficient national will to make the investment in education required, there is good reason to think that Indonesia's social and economic future looks very bright.

Table of Contents

I. 25 Year Education Goals for Economic and Social Development in Indonesia: Executive Summary

II. The Basis for Expansion and Improvement of Education: Efficient Contributions to Growth and Equity

III. Structural Change and Investment in Education

IV. A Global Analysis of Education: Social and Economic Change in Industrializing Societies

V. Technology and Human Capital Formation: Implications for Indonesia's 25 Year Education Goals

VI. Developing Effective Educational Systems

VII. Education, Demographics, the Labor Market, and Development: Indonesia and the Process of Transition

VIII. Indonesian-ASEAN-Pacific Rim Comparisons

IX. Data for Indonesia, ASEAN, and Pacific Rim Nations 1960-91: Appendix

Investment in Education, in R&D, and in Physical Capital; Labor Productivity and Productivity

Growth by Industrial Sector, Education Enrollment Ratios and Labor Force

10.2 EDUCATION AND THE ECONOMY

Conclusions

This volume develops ways of improving the efficiency of the education system, focusing on the scope of the contribution of education to economic development, and on the improvement in external efficiency as a key means of increasing that contribution.

The problems with external efficiency in education in Indonesia poor match between graduates and the changing needs of job markets, and including either under or over investment in human resource development at each level, or over all is a common one in developing countries. But it is a problem that emerges as the successes of educational expansion and the role of education in aiding development begin to unfold.

These successes have been remarkable in Indonesia. They include a dramatic expansion of basic education, with essentially co-equal education of all males and females through 6th grade, 41% through 9th grade, and a 600% expansion in access to higher education in recent years for example. The senior secondary and college systems have begun to serve the needs of a growing economy, in engineering, agri-business, and commerce and business administration. These needs however now are changing rapidly and will continue to change since Indonesia has moved to an export oriented growth strategy, and since the demands of changing technology and management techniques require increasing numbers of well educated graduates who also can learn on the job and adapt to change.

This requires a new way of looking at the implications for the development of human resources through education. This volume seeks to do this, seeking to avoid an excessively technical level so that it is readily accessible to a wide audience of government officials, academics and others in the education system, and citizens in business and other communities who are well informed but who are not specialists. At the same time it seeks to maintain a high level of technical competence (some of the chapters are adaptations of articles that have been refereed by technical specialists and are being published in academic journals), and to be in tune with current worldwide research on the issues addressed.

That is not to say that there will be unanimous agreement among technical specialists, much less among persons who have vested interests in one or another part of the education system. There never is when new ideas raise questions about some aspects of older ideologies, or where a system such as education is involved that touches deeply the lives of so many people. But we have tried hard to be objective, as factually accurate and comprehensive as is possible given the resources that are available, and to faithfully represent the mainstream position on technical issues in current research.

Sources of Inefficiency

Findings concerning *sources of external inefficiency* in education that may reflect generically the conditions in many emerging developing countries but that are based primarily on data for Indonesia include the following:

First Source of External Inefficiency: Overall, with respect to optimal total levels of investment in human capital under uncertainty, there appears to be some problems with the quality of education following enrollment expansion that are partly due to:

- Underinvestment of financial resources in education overall, vis-a-vis rates of investment in physical capital, making it difficult to maintain quality.
- Underinvestment especially at the junior secondary level (given the high rates of return, low unemployment, and lower underemployment rates available).

- Public subsidy through the provision of good schools and good books helps to induce additional *private* saving by parents (refraining from consumption as the child's earnings and contribution to home production is foregone) and private investment (of these foregone earnings in the child's room, board, clothing, and other school expenses), a critical saving and investment partnership with parents that contributes to the nation's economic growth.

Second Source of External Inefficiency: Mismatches of graduates with the needs to accommodate changing technologies in production, marketing, and management and with emerging new opportunities in an increasingly export-oriented economy due primarily to:

- The need to use *Market Signals* more, in relation to manpower requirements planning methods that reflect historical data in order to respond to changing needs.
- Lack of the infrastructure for decentralization of career decisions to students and their families, who are known from studies done elsewhere to "vote with their feet" when given the information and the capacity to do so.

Third Source of External Inefficiency: Excess "social demand" for public higher education, contributing to problems with the quality of the education, given the limitations on the resources available, and high costs because of delayed completion of bachelor's degrees. These are all due to:

- Insufficient resource recovery from parents through tuition.
- Insufficient resource recovery from students, due to lack of sufficient opportunities for work-study (undergraduates) and research and teaching assistantships (for graduate students) that also develop apprenticeship and job skills.

Fourth Source of External Inefficiency: Selection criteria for undergraduates that give insufficient weight to the criterion that is usually found to be the best predictor of success in college and productivity in the labor force later.

- The reason for this might be the methods for monitoring each high school principal when determining the student rankings within each local school class to prevent subversion of this important statistic.
- The implications relate not only to improving intergenerational mobility, improving educational incentives within the poorer schools, and achievement of cultural diversity in leadership, but also greater productivity of graduates due to the combination of ability and motivation, and hence greater external efficiency.

Fifth Source of External Inefficiency: Methods of financing that do not provide sufficient incentives for internal efficiency (in the primary and secondary schools, or in colleges), or provide sufficiently for pupil equity at these levels.

Policy Options

Policy options are suggested for dealing with each of these sources of external inefficiency (which in turn is somewhat interdependent with internal inefficiency if quality is low and costs therefore are relatively high). Various alternatives are offered throughout this volume, most of which would require a further implementation-project design study. In brief summary form, related to each source identified above, the policy options include:

1. For Achieving Overall Optimal Levels of Investment:
   - A 3-Year Rolling Budget covering total investment in human resources development through education (routine plus development, MOEC plus MHA) that is responsive to annual recomputation of the emerging market signals.

2. For Reducing Mismatches of Graduates with Jobs:

   - Development of more comprehensive market signals based on annual nationwide data from refined SAKERNAS and SUSENAS surveys to gradually replace the indicative manpower "requirements" planning methods used at earlier stages of development when data was less available.
   - Decentralization of career decisions to students, with schools and Vice-Rectors encouraged (through budgetary means) to respond to local market signals.
   - Further development of the system of credits given for individual lecture-discussion or lab courses completed, permitting students to transfer most credits as they change majors, transfer between colleges, and change high school tracks.
   - Extension of efficiency-based Management Information Systems to school systems and colleges, and expansion of their scope to include job-placement information in cooperation with the Ministry of Manpower.
   - Establishment of college placement offices and training for job-counsellors in the schools.

3-4. For Improving the Quality of Higher Education, and Simultaneously Reducing Excess Social Demand":

   - Increased resource recovery from parents (tuition).
   - Increased resource recovery from students (work-study, research assistantships, teaching assistantships, student loans).
   - Increased resource recovery from alumni.
   - Increased resource recovery from industry (apprenticeships, product and process development contracts).
   - Increased resource recovery from government (user-driven research grants).
   - Refinement of the college admissions selection criteria based on further research using Indonesian data testing the weight to be placed on (accurate) ranks within each local high school as a predictor of success in college.
   - Accreditation of private (and public) colleges and universities to maintain standards.

5. For Improving Financing:

   - Development of an objective financial transfer mechanism for financing K-12 schools that provides incentives for efficiency (time-on-task), pupil equity (equality of educational opportunity), and incentives for local participation in the financing.
   - Need-based tuition waivers and other financial aids for able admissible college students from low income families based on an objective nationwide financial need analysis system.
   - The internal resource recovery policy options suggested above should not only provide resources to increase quality, but also contribute to efficiency (e.g., 4-4-4 1/2 years to normally finish a bachelor's degree).

Finally, other volumes in this series deal with *internal* efficiency in education (Vol. III), financing methods (Vol. IV), and applications to longer range planning or goal-setting (Vol. I). They develop the evidence and the policy options in those areas in much greater depth.

Taken together with external efficiency, these combine to seek overall economic efficiency in human resource development. Since the major underdeveloped resource in many developing countries, and also the one with the greatest potential, is the nation's human resources – and Indonesia is no exception – seeking to constantly improve the efficiency and equity with which this is done is a matter of considerable importance.

We hope that these studies will contribute positively to improving efficiency, quality, and equity in the educational system. This includes in particular the ways that the educational system can make provisions for continual adaptation to the changing needs of a growing export-oriented economy, and to the needs for regional development. The gradual improvement in the capacities of the people through education, aided by improvements in the education system, is a critical element to what is otherwise a potentially very bright economic future for Indonesia.

Table of Contents

I. Overview: Findings and Their Implications for Policy

II. Universal Basic Education: An Overall Strategy of Investment Priorities for Growth

III. Market Signals and Labor Market Analysis: A New View of Manpower Supplies and Demands

IV. Strategies for Planning Efficient and Equitable Human Resource Development

V. Investment Criteria for Financing Education in Developing Countries

VI. The Economics of School Expansion: Why Families Invest in Education (The Basis of Social Demand)

VII. Excess "Social Demand" for Higher Education, Quality, and the Market for College Graduates

VIII. Responsibilities for the Placement of Graduates: A Part of the Infrastructure for Decentralization

IX. Conclusions

11.0 DEVELOPING PROVINCIAL LEVEL SECTOR REVIEW CAPACITY

Sector Review Update

EPP conducted a series of workshops at six month intervals to continue the training of local officials in sector assessment methodology. The workshops focused on analysis of data collected by workshop participants since the first workshop held in 1990. Participants analyzed the provincial-level survey and interview data to describe the status of three subsectors: educational management, educational finance, and education and manpower.

The final outputs are a trained cadre of middle-level Indonesian policy makers who will be able to conduct comprehensive, highly focused sector assessments with minimal input from external consultants. They will be able to conduct sector and subsector assessments at the provincial level rather than at a superficial national level. There are two final products. The first is the sector assessment update that will serve as a guideline to effective decision-making for the educational sector in the long range planning and decentralization efforts. The second product is a manual on methodologies taught during the workshops to support future updates conducted without the need for any substantial input of external consultants.

11.1 WEST JAVA RECOMMENDATIONS

Recommendation 1: Match Primary and Junior Secondary Curriculum

Problem:

The primary curriculum at present is poorly matched with junior secondary curriculum. Therefore, primary graduates who continue to Junior Secondary school face some constraints. Implementation of this recommendation should lead to higher levels of productivity for both teachers and students by reducing repetitiveness. The primary and junior secondary school curriculum should be a continuous curriculum.

Action:

1. Curriculum Center undertake a study of the content of primary and junior secondary curriculum.
2. Based on the study of the curriculum, the center should revise the curricula.

Recommendation 2: Review Local Content Curriculum

Problem:

The local contents curriculum of primary and junior secondary schools do not reflect the needs of the local labor market. As consequence graduates are unable to take advantage of opportunities that exist for employment or self employment. We suggest that the Regional Office of MOEC in West Java review local content curriculum.

Action:

1. Undertake research on job market requirements.
2. Based on the research, initiate discussions with Parent Teacher's Association to determine the appropriate content of local curriculum.

Recommendation 3: Eliminate the maldistribution of teachers

Problem:

In West Java there is a maldistribution of teachers. In addition, there appears to be a shortage of junior secondary subject matters teachers. We suggest that the Regional Office of MOEC distribute the number of teachers needed to all Kabupaten/Kotamadya based on the school needs.

Action:

1. Regional office of MOEC in West Java undertake research on what subject matter teachers are needed, which Kabupaten need subject matter teachers, and the best way to distribute the teachers needed by each school.
2. Regional office of MOEC in West Java rotate the teachers in "surplus" schools to other minus schools accompanied by monetary and non monetary rewards.

Recommendation 4: Improve Access to Junior Secondary Schools

Problem:

Participation rate in West Java in 1990/1991 is still low compared to other Provinces in Indonesia. We suggest that Regional Office of MOEC in West Java improve access to junior secondary school through several ways.

Action:

1. To employ innovative delivery systems and intensive campaign for junior secondary education admission.
2. Increase the number and improve the quality of Packaged B program with qualified teachers.
3. Together with local community undertake a mass media or door to door campaign to support the program of universal Education.
4. Provide scholarships for the successful primary graduates.

Recommendation 5: Undertake a Study on Transition Rate from Primary School to Junior Secondary School

Problem:

Compared to other provinces in Indonesia the transition rate from primary to junior secondary school in West Java is low but we do not know for sure what the reasons are. It is assumed that the primary graduates did not want to continue to junior secondary school for the following reasons.

1. The factory (where primary graduates work) prefer primary graduate rather than junior secondary graduates since they can pay them small salaries.
2. The parents of primary graduates prefer their children to work and get money, rather than to study in junior secondary school. These assumptions need to be proved.

Action:

1. Regional office of MOEC in collaboration with Bappeda and Higher Education (IKIP) undertake research to find out the reasons of the primary school graduates do not continue to junior secondary school in West Java, and that the regional office of Labour Force makes regulations requiring at least basic education (9 years) for workers or job schools.
2. Establish coordination between the Regional Office of MOEC and the Regional Office of Labour Force to make regulation on basic job requirements. The regulation should state that the employees should not be below 16 years old, and should possess at least junior secondary school certificate.

Recommendation 6: Rearrange Curriculum of Pesantren

Problem:

Pesantren are the Islamic institutions that do not have the standardized curriculum as formal schools. The existence of Pesantren is important to the West Java Community to improve the knowledge and skill in applying Islamic religion. The graduate students from Pesantren have some difficulty in continuing further study in formal school, or obtaining jobs in labour market; however due to what is

considered inadequate study of general subject, we suggest that Pesantren rearrange their curriculum so that its graduates can be accredited have an equal level of education with junior secondary level.

Action:

1. Regional office of MOEC and MORA together with BAPPEDA in West Java collect the data of the number of Pesantren.
2. Undertake the regional workshop dealing with the importance of formal education and the MOEC curriculum, involving the people from Pesantren.
3. Undertake the training of teachers from traditional Pesantren focusing on additional curriculum needed.
4. Monitor the implementation of the standard general curriculum in Pesantren.

Recommendation 7: Repair Damaged Classrooms

Problem:

In West Java there are a large number of classrooms on Primary level but some of the classrooms need to be repaired. We suggest that the Governor's office, o.q. Dinas P & K oversee the necessary repairs. On Junior Secondary level new classrooms will need to be built as enrollments expand.

However, there is also need for repairing already existing classrooms. We also suggest that the regional office of MOEC take responsibility for planning and monitoring the building of new classrooms and the repair of old classrooms at this level.

Action:

1. Regional office of MOEC in West Java motivates Parent Teacher Association to provide additional amounts of funds for repairing badly damaged classrooms, beside the funds that have been provided by government.
2. Ask business company to help the government in building schools.

Recommendation 8: Reviewing the Ministry of Education Culture's Decree numbers 363 and 364 of 1988 dealing with delegation of authority from regional office of MOEC to District Office of MOEC on same parts of junior secondary schools administration.

Problem:

In District Office of MOEC (Kandep Kikbud Kabupaaten) there is a Subsection of primary school (Seksi Pendidikan Dasar) that is responsible for managing the primary school affairs, but there is no subsection of junior secondary schools that is responsible for managing junior secondary school affairs.

We suggest that the MOEC's Decree no. 363 and 364 of 1988 is reviewed to be more functional. if it is possible a new unit in District Office of MOEC should be established to handle junior secondary school affairs.

Action:

Head of Regional and District Office of MOEC in West Java undertake job analysis concerning junior secondary school affairs. Based on this analysis propose a new structure in District Office of MOEC to handle junior secondary schools affairs.

11.2 EAST JAVA RECOMMENDATIONS

Recommendation 1: Increase Transition Rate

Problem:

There is a large discrepancy between the current transition rate from SD to SLTP and the planing target. The SC enrollment in 1990/1991 defined as net enrollment ratio in SD was 99.62%. However, the transition rate in SLTP was only 68.50%.

The transition rate target for the end of 1993/1994 is 85%.

Actions:

1. Implement a campaign to promote universal education. The campaign will provide information to parents on the importance of basic education for their children. The information should be provided by a Coordination Team on universal education programs consisting of departments such as Ministry of Information, Ministry of Religious Affairs, Ministry of Labour, Bureau of Statistics, Ministry of Social Affairs and others. The campaign using meetings of the various organizations in the neighborhood (PKK, Dharma Wanita, RT, RW, etc.) and using mass media, posters, newspapers, radio, TV, and other performances will promote the importance of human resource development to the future development of the country.

   A related campaign is needed to persuade parents to "adopt" school children at the junior secondary level. The parents' voluntary program (program orang tua asuh) would support the schooling of children from poor families, helping to overcome the financial barrier to schooling.

2. Regulations need to be made to support universal basic education. For example, jobs in government or private institutions should require the Junior Secondary certificate. In addition, MORAs regulation stating the minimal marriage age should be expanded to include attainment of basic education. Labour Force Regulations stating the minimal age to employ children should also require evidence of a Junior Secondary School certificate.

3. In order to increase the access of rural children to school, incentives must be provided to teachers to work in remote areas. Similarly, to increase access in towns, incentives should be given for teacher's overtime teaching hours. Parents' teacher association fees (BP3) and other local fees should be developed to improve the welfare of teachers.

4. Rank promotions for teachers. Credit points for rank promotion should be revised, so that higher score should be given to dedicated teachers who work in remote areas. For example: change to score from 0.50 to 3.

5. No admission test should be held to admit new students from primary school to junior secondary school

6. Improve the qualification standard of the school principal to maintain school quality; good schools attract students. In some regions, where marriage is an obligation as soon as the children reach puberty, there should be a regulation to encourage married students to continue their study at school.

Recommendation 2: Increase the Continuity of the Curriculum Between Primary and Junior Secondary School

Problem:

Lack of articulation between primary and junior secondary school organization and curriculum.

Actions:

1. The final exam (EBTANAS) for primary school should be omitted and at graduation from primary school students should be given a certificate declaring that they have finished step one of basic education.
2. On the one hand, curriculum should be periodically evaluated and revised by Curriculum at Balitbang Dikbud to adjust to the development of science and technology, but on the other hand, it should be suitable with the local environment.
3. A sub-district Curriculum Team should be established to formulate local content curriculum suitable to the regional environment.

Recommendation 3: Improve the Teacher Placement and Reward System

Problem:

Teachers at the primary and junior secondary school level are distributed badly. On the one hand, some schools have more teachers than they need, and on the other hand, other schools have a shortage of teachers. This teacher shortage at the junior secondary level, in particular, is likely to grow worse if the government does not take steps to change the manner of distribution.

Actions:

1. Provide high priorities for new teachers placement in remote rural schools.
2. Increase incentives for teachers to work in remote areas. These could include credits for advanced education or choice of next assignment.
3. Provide additional facilities such as housing, vehicles for transportation etc. to remote area teachers.
4. Move remote area teachers after they worked for a certain period, e.g., 5 years working, to other schools or districts.

Recommendation 4: Facilitate Educational Planning with Good School Mapping

Problem:

Some schools lack new students, while some schools are overcrowded and refuse new students. Many students do not go to school because the distance between the school and the student's house is too far. In addition, it is frequently difficult to obtain land to build new one story school buildings or add to old buildings.

Action:

School mapping should be undertaken and all new schools located according to the density of the school age children in the area. School mapping would also provide the information needed and other environmental conditions.

Considering the difficulty to fund appropriate locations of land the school should be built in two stories to decide to build new classrooms, operate double sessions, build a new school, start open junior secondary schools, or offer Package B, etc.

Recommendation 5: Improve the Textbook and Laboratory Equipment Delivery System

Problems:

1. Some schools never receive any textbooks from the government, other schools receive enough textbooks. Some schools do not receive textbooks on time. In addition, some schools receive textbooks but not the textbooks that they need.
2. The same problems apply to the distribution of laboratory equipment.

Actions:

1. Accurate data should be used to plan and monitor the textbooks delivery system. Textbooks delivery should be on time.
2. Laboratory equipment should be provided based on the need of the schools. The utilization of the equipment available at schools should be monitored periodically.

Recommendation 6: Implement Government Regulation (PP 28/1990) for Conducting Primary School

Problem:

The guidance, training, and rank promotion of many primary school teachers is not well administered. This is because on one hand, MOEC regards this job as part of their duty but, on the other hand, MOHA considers that this job is part of their responsibility.

Action:

Provide the guideline of implementation of the PP (Government Regulation) No. 28/1990 immediately and other PP relevant to primary school management.

Recommendation 7: Improve the Memorandum of Understanding Concerning the Status of General Education at MI and MTs

Problem:

Based on the spot information, many Islamic primary schools do not fully apply the memorandum of understanding especially yet as it concerns the portion provided to the religion curriculum (30%) and the general curriculum (70%).

Actions:

The memorandum of understanding should be implemented as follows.

1. Joint MOEC, MOHA, and MORA supervision of Islamic primary schools.
2. Provide additional teachers (from MOEC) to the Islamic secondary school instead of religion teachers.
3. Distribute subject matter teachers who graduate from D2 for grade IV to VI in Islamic primary schools.

Recommendation 8: Adjust the Evaluation System and Improve the Security System for Examinations

Problem 1:

Based on the UU No. 2 1989, the primary and secondary school is one package. In fact, currently the primary school still uses the quarter system, but junior secondary school uses the semester system.

Action:

Junior secondary school should adopt a quarter system. The advantage of using quarter system is that it shortens the time of evaluation so that the student is provided with feedback earlier.

Problem 2:

Leakage of examination material occurs every year. Manipulation of the EBTANAS score also occurred last year.

Action:

Security should be improved in the examination center and in the regional examination sites for the SMP final examination, specifically for EBTANAS subject matter. In addition, firm penalties should be established for people who leak examination material and who manipulate the examination scores.

Recommendation 9: Improve the Equity Base of School Finance

Problem:

Public school resources vary enormously as both the public school fee and parent teacher association fee (BP#). Some of the favorite public schools have admission fees and developmental fees as well which are oriented to specific projects. The well-equipped school with highly motivated teachers supported by BP# will have the higher school quality.

Action:

Government financial support should be given more to the schools with low supporting fees, especially in remote areas. In addition, wealthy schools should be encouraged to provide scholarships for a certain percentage of poor students.

Recommendation 10: Redefine supervisors' Functions

Problem:

The supervisor tasks have not been fully accomplished.

Actions:

1. Standard qualification should be required for the appointment of supervisors.
2. Funds for supervisors activities should be provided by regional office instead of by school.
3. Improve the cooperation between supervisors and the Head of District Office of MOEC.

Recommendation 11: To Conduct Further Studies/Research

Problems:

1. There is inadequate knowledge about the factor associate with students/parents decisions to invest in schooling, only guesses can be made about their decisions.
2. Little information exists on job market absorption based on the minimal educational background requirement.
3. No data is available on the influence of class size on instructional outcomes.
4. Student's achievement in primary and junior secondary school for different subject matters. Average examination scores have been decreasing.
5. Enrollments in open junior secondary school have decreased in several regions.
6. The constraint to implementation of Student Active Learning (CBSA) in all primary and junior secondary schools.
7. Inadequate information about general education at Madrasah (MI & MTs).

Actions:

1. Research is needed to track the decisions made by students/parents to select schools related to their future welfare.
2. Field surveys on job market absorption should be made to provide a description of how the managers select workers.
3. Studies on the influence of class size on instructional outcomes will provide important evidence for the planners in building new classrooms.
4. Studies to identify factors influencing the decreasing of average scores will suggest ways to reverse the trend.
5. Studies on the factors influencing the decreasing number of open junior secondary school students will provide information needed to improve opportunities for rural students.
6. Studies on the factors preventing adoption of student Active Learning in different conditions of primary and junior secondary schools will provide the basis for school improvement efforts.
7. Research carried out on MI and MTs Curriculum, related to general education content.

11.3 SOUTH SULAWESI RECOMMENDATIONS

Rekomendasi 1: Peningkatan jumlah tamatan SD yang melanjutkan belajar ke SMTP atau ke SKB dan tamatan SMTP yang melanjutkan ke SMTA.

Masalah:

1. Tamatan SD yang tidak melanjutkan belajar ke SMTP masih cukup banyak 49.851 (35,72%).

   Tempat yang belum terisi di kelas satu SMTP masih 6.179 Tetapi jika semua tamatan melanjutkan ke SLTP, maka masih perlu disediakan ruang kelas baru sebanyak 1.092 atau 364 gedung sekolah baru.

2. Tamatan SMTP yang tidak melanjutkan ke SMTA masih cukup banyak, yaitu 25.681 (30,55%).

   Tempat yang belum terisi di kelas satu SMTA masih sebanyak 2.670. Tetapi jika semua tamatan melanjutkan ke SMTA, maka masih perlu disediakan ruang kelas baru sebanyak 575 atau 192 gedung sekolah baru.

Pemecahan:

1. Merancang suatu program kegiatan penyuluhan bagi orangtua oleh Tim Gabungan (PKK, DIKMAS, BKKBN dan instansi terkait lainnya) yang dikoordinasikan oleh Kanwil Depdikbud mengenai wajib belajar 9 (sembilan) tahun, agar orangtua memberi kesempatan dan mendorong anaknya untuk lanjut belajar ke SMTP/SMTA atau ke SKB.
2. KIP UPG dapat memikirkan yaitu menyediakan program khusus yang memberikan pelayanan kepada orangtua/masyarakat tentang pembinaan anak.
3. Gerakan penyuluhan masal tentang wajib belajar melalui masmedia.
4. Diadakan penelitian pelacakan lulusan yang tidak lanjut belajar.

Rekomendasi 2: Peningkatan pelaksanaan EBTANAS

Masalah:

Banyak sekolah (SD dan SMP) yang pada tiga tahun terakhir ini NEM nya tidak mencerminkan perolehan yang sebenarnya. Umumnya dari sekolah-sekolah di pinggiran kota, sekolah swasta dan di pedesaan, sehingga NEM sulit dijadikan sebagai tolok ukur kualitas yang obyektif. (Gambar 1)

Pemecahan:

Supaya pemeriksaan hasil ujian diawasi secara ketat oleh unit Kanwil Depdikbud untuk SMP.

Rekomendasi 3: Penggunaan Jam Belajar Efektif

Masalah:

Jam belajar efektif di sekolah-sekolah (terutama di pedesaan) sesuai dengan jadwal tak terisi sepenuhnya sebab kurang kedisiplinan guru dan adanya kegiatan non kurikuler yangmengganggu kegiatan belajar terjadwal murid di sekolah.

Hal tersebut mengganggu pencapaian target kurikulum dan daya serap siswa.

Pemecahan:

1. Perlu adanya Surat Edaran Gubernur yang melarang murid dan guru melaksanakan kegiatan non kurikuler yang diinstruksikan oleh penguasa setempat selama jam belajar.
2. Perlu ada studi khusus mengenai penggunaan jam belajar efektif di sekolah dengan sampel yang memadai.

Rekomendasi 4: Peningkatan penyediaan dan perbaikan pendistribusian buku paket siswa dan buku pedoman guru di SD dan SMP.

Masalah:

1. Penyediaan buku paket belajar siswa di SD dan di SMP demikian pula buku pedoman guru masih kurang, menurut jenis maupun jumlahnya. Rasio murid buku paket pada SD = 20:1 SMP = 19:1. Rasio guru dengan buku pegangan guru di SD + 9:1 dan SMP + 12:1 (lihat tabel 2 dan 4).
2. Pendistribusian buku-buku tersebut sering tidak lancar.

Pemecahan:

1. Pemerintah supaya meningkatkan jumlah eksemplar buku paket sesuai dengan yang dibutuhkan.
2. Hambatan-hambatan yang selama ini terjadi dalam pendistribusian buku dari propinsi sampai di sekolah perlu diatasi.

Rekomendasi 5: Peningkatan pelaksanaan CBSA di SD sesuai dengan kondisi sekolah dan lingkungan.

Masalah:

1. Pemahaman guru dan Kepala SD sebagai konsep CBSA masih kurang.
2. Pelaksanaan CBSA pada SD belum merata pada semua sekolah sesuai dengan kondisi sekolah dan lingkungan.

Pemecahan:

1. Penataran CBSA untuk guru dan Kepala Sekolah supaya diperluas dan ditingkatkan pada sekolah-sekolah lainnya.
2. Peranan PKG dan MGBS/MGMP ditingkatkan.
3. Penelitian tentang hambatan CBSA.

Rekomendasi 6: Peningkatan pelaksanaan Muatan Lokal Kurikulum (MLK) pada tingkat SD.

Masalah:

1. Sampai saat ini MLK baru dilaksanakan terbatas pada mata pelajaran yang bersifat monolitik seperti Bahasa Daerah dan Keterampilan. Itupun masih ada sekolah yang tidak melaksanakan.

   Adapun MLK yang bersifat integrated belum terlaksana.
2. Pemahaman guru dan Kepala Sekolah terhadap konsep MLK belum cukup mantap dan masih beraneka ragam.

Pemecahan:

1. Perlu dibuat proyek rintisan terbatas dengan memilih sejumlah SD yang baik yang berlokasi di Kabupaten yang memiliki komoditi potensial dan marketable, yang dapat dijadikan mudah dari Ujungpandang.
2. Perlu secepatnya dibentuk Tim bersama/gabungan yang terdiri dari unsur Kanwil Dikbud, Pemda, IKIP yang bertugas memkirkan, menggerakkan dan mengkoordinasikan kegiatan rintisan MLK.
3. Diadakan penelitian evaluasi dan studi kelayakan dengan sampel yang cukup luas tentang pelaksanaan MLK.

Rekomendasi 7: Pelaksanaan Pemerataan guru SD dan guru bidang studi SMP.

Masalah:

1. Guru-guru kelas pada SD di daerah pedesaan masih kurang, dimana seorang guru kelas masih mengajar/melayani lebih dari satu atau dua kelas. Guru baru enggan ditempatkan di daerah terpencil.
2. Guru bidang studi pada SMP Negeri belum merata sesuai dengan kebutuhan, sehingga banyak guru yang mengajarkan mata pelajaran yang bukan bidang studinya tempat di daerah terpencil dengan akibat proses belajar mengajar yang berkualitas sulit diharapkan terlaksana.

Pemecahan:

1. Pemerintah Daerah, Kandep Dikbud dan Dinas P dan K perlu segera mengatur penyebaran guru-guru SD yang bertumpuk pada sekolah-sekolah di Kota Kabupaten atau Kotamadya ke sekolah-sekolah di Kecamatan/Desa yang masih kekurangan guru.
2. Pemda dan Dinas P dan K tingkat Propinsi:
   a. Mengusulkan kepada Pemerintah agar bagi tamatan SPG yang bersedia ditempatkan di dearah pedesaan dapat diangkat menjadi guru.
   b. Memprioritaskan alumni D2PGSD yang menandatangani kontrak/tugas di daerah terpencil untuk segera diangkat pada kesempatan pertama.
3. Kanwil Depdikbud tingkat Propinsi segere mengakan pemerataan guru bidang studi SMP ke seluruh SMP di Sulawesi Selatan, dari sekolah-sekolah yang berkelebihan kepada sekolah-sekolah yang masih membutuhkan.
4. Konsekwensi dari mutasi guru-guru yang akan dipindahkan ialah perlunya disediakan dana untuk pelaksanaan pemerataan dan penyebaran guru-guru bidang studi (SMP) dan guru-guru SD.
5. Pendataan yang seksama.

Rekomendasi 8: Peningkatan sarana dan prasarana serta fasilitas pendidikan di SMP.

Masalah:

Laboratorium

1. Laboratorium tidak/kurang berfungsi karena keterbatasan sarana, alat, dan fasilitas.
2. Tenaga pengelola lab/laboran tidak ada, dalam pelaksanaan sering dirangkap oleh guru bidang studi yang relevan (biologi dan lain sebagainya).

3. Ada droping alat laboratorium sudah didistribusikan dari pusat tetapi ruang laboratorium belum ada, sehingga siswa berpraktek di ruang belajar.
4. Sebagian besar alat/bahan kimia yang didrop dari Pusat sejak Repelita III, IV tidak dapat dipergunakan oleh guru dan hanya tersimpan bertahun-tahun di lemari, karena komponennya tidak lengkap.
5. Sebagian besar ruang laboratorium SMP yang dibangun melalui Proyek PELITA berangsur mulai rusak.
6. Pegelolaan laboratorium tidak intensit karena ditangani oleh tenaga yang tidak dipersiapkan untik itu.

Ruang Perpustakaan

1. Sebagian besar SMP Negeri belum memiliki ruang perpustakaan yang layak.
2. Buku-buku di perpustakaan sekolah masih sangat minim, kebanyakan berupa buku-buku pelajaran (non fiski) buku yang telah tua. Buku-buku fiksi dan surat kabar/majalah-majalah jang menyangkut pendidikan kurang sekali.
3. Pustakawan yang mengelola perpustakaan kebanyakan diambil dari guru bidang studi.

Ruang BP

Sebagian besar atau 80% dari 444 SMP Negeri tidak memiliki ruang BP yang memadai.

Ruang Osis

Ruang Osis pada sebagian besar sekolah tidak ada. Padahal berdasarkan struktur organisasi Osis ruang tersebut harus ada.

Pemecahan:

1. Kantor Wilayah Depdikbud diharapkan segera merencanakan dan mengusahakan pengadaan sarana alat, fasilitas dan bahan laboratorium lainnya untuk SMP Negeri yang ada di Sulsel ke Departemen P dan K di Jakarta.
2. Kanwil Depdikbud bekerja sama dengan BP3 supaya mengusahakan pembenahan laboratorium IPA, ruang perpustakaan, ruang BP, ruang Osis yang belum ada atau belum lengkap di sekolah-sekolah.

Rekomendasi 9: Pembenahan informasi dan dokumentasi

Masalah:

Pengisian format penjaringan data belum dilakukan sepenuhnya (misalnya: pemilahan jenis kelamin, penyelesaian target kurikulum dan sebagainya). Pengolahan data menjadi informasi yang siap pakai untuk pengambilan keputusan dan pengkajian belum dilakukan sepenuhnya di bagian perencanaan Kanwil

(kurang rinci, kurang lengkap, sering lambat).

Pemecahan:

1. Pengisian format-format penjaring data supaya dilakukan secara cermat dan lengkap.
2. Pembinaan staf pada Bagian Perencanaan perlu dilaksanakan secara berkesinambungan sesuai dengan kebutuhan.

Rekomendasi 10: Peningkatan kelancaran komunikasi dari tingkat Propinsi ke Kecamatan/sekolah dan Sebaliknya.

Masalah:

Arus komunikasi baik yang berupa informasi biasa, penyebaran kebijakan dan terutama inovasi belum berjalan dengan lancar.

Penyampaian informasi biasa (undangan rapat dari Propinsi/Kebupaten).

Penyebaran kebijakan, juknis-juknis dan juklaknyaa (SK Menpan no. 26 dan lain-lain).

Penyebaran inovasi pendidikan (CBSA, Muatan lokal).

Pemecahan

1. Diupayakan tersedianya sarana komunikasi kontemporer di Kabupaten dan Kecamatan yang terjangkau oleh kemampuan seperti CB.
2. Naskah-naskah kebijakan juknis dan juklaknya perlu disebarkan dan disertai penyuluhan secara intensif (seperti SK Menpan no. 26, Juknis Mendikbud dan seterusnya)
3. Perlu pelatihan bagi para pengelola dan pelaksana pendidikan di lapangan demi berhasilnya penyebaran informasi pendidikan.

   Di samping itu juga monitoring secara berkesinambungan serta tunjangan biaya.

Rekomendasi 11: Peningkatan pengetahuan dan keterampilan para pengelolaKantor Dinas P dan K Dati I/Dati II dalam bidang Adminstrasi dan Management pendidikan.

Masalah:

Pengetahuan dan keterampilan (keprofesionalan) para pengelola Kantor Dinas P dan K Dati I/Dati II dalam bidang administrasi dan management pendidikan masih kurang memadai.

Pemecahan:

1. Peningkatan pengetahuan dan keterampilan para pengelola Kantor dinas P dan K dalam bidang Administrasi management pendidikan melalui penataran, yang diselenggarakan oleh Bappeda Tingkat I.
2. Perlu seminar/temu pendapat secara berkala tentang pelaksanaan administrasi ganda oleh Tim Gabungan Bappeda Tingkat I, Kanwil Depdikbud, Dinas P dan K dan Perguruan Tinggi.
3. Pengangkatan para pengelola Kantor Dinas P dan K Dati I/II seyogyanya dari mereka yang berlatar belakang Administrasi Pendidikan.

Rekomendasi 12: Peningkatan alokasi dana pendidikan SD dan SMP.

Masalah:

Dana yang dialokasikan/disubsidikan oleh Pemerintah Daerah kepada Sekolah Dasar (SD) berdasarkan komponen jenis untuk jenis kegiatan yang terdiri dari 10 jenis komponen kegiatan, hanya 5 jenis komponen kegiatan yang disubsidikan, itupun dananya terlalu kecil (misalnya biaya siswa perbulan: Rp 100, -), sedangkan 4 komponen lainnya tidak teralokasi.

Pemecahan:

1. Kepada Pemda Tingkat I dan II, BAPEDA, dan Dinas P dan K Tingkat Propinsi dan Kabupaten-dapat menyusun dan memprogramkan kembali tentang besarnya alokasi anggaransesuai dengan kebutuhan pendidikan di Sekolah Dasar (SD).
2. Kanwil Depdikbud dengan unit kerja yang terkait, dapat menyusun dan memprogramkan anggaran rutin melalui UKOR-nya lebih obyektif dengan berdasar pada data dan informasi dari sekolah yang lengkap untuk menunjang perencanaan anggaran pendidikan.
3. Dana OPF dan BF2 yang ada di sekolah perlu diteliti penggunaannya secara ketat oleh para Pengawas pendidikan untuk melihat dan meneliti pemanfaatan dana-dana tersebut.
4. Pengurus BP3 yang dibentuk anaknya harus masih bersekolah di sekolah itu.
5. Dana BP3 yang disimpan di Bank harus diketahui oleh Kepala Sekolah dan Pengawas yang mengawasi sekolah tersebut karena sebagian besar dana itu adalah dari murid/orangtua yang pembayarannya bersama uang SPP murid, sedangkan kegiatan BP3 seharusnya mencari sumber dana lain, bukan hanya dari siswa yang hakekatnya dari orantua juga.
6. Dana Osis dan dana Pramuka yang merupakan kegiatan siswa harus diketahui dan dimanfaatkan secara jelas dalam program kerja Osis demikian pula dari Pramuka. Pengawasan atas dana-dana ini perlu ditertibkan.